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The objectives of the study were to identify present and emerging off-farm agricultural occupations and to determine for present and anticipated numbers of employees, competencies needed for entry and advancement, job characteristics, and educational needs. A sample of 472 was drawn from a population of 2,952 firms. Of 437 firms contacted by 60 trained interviewers, 336 employed persons needed agricultural competency. Findings indicated that about 2,200 firms employed about 35,000 persons of which 13,000 (37 percent) in 158 job titles needed agricultural competencies. Each year for the next 5 years, the 2,200 firms will need 240 additional and 400 replacement employees. Employees generally started at 23 to 30 years of age and stayed in a job 11 to 15 years. A wide range of salaries averaged $462 per month and a longer than 40-hour week was prevalent. High school graduation was the minimum educational requirement for most jobs. Farm background and work experience were advantageous to job seekers. Competencies for most job titles included (1) employee relations with supervisors, (2) employee relations with fellow workers, (3) communications, and (4) salesmanship and customer relations. Specific competencies were identified for each ob title, and grouping of competencies was evident. (JM)

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# Occupational Opportunities and Training Needs of Youth for Non-Farm Agricultural Jobs in Washington State

Farm Machinery Sales and Services
Farm Supplies and Equipment
Livestock and Poultry
Crops, Forestry and Soil Conservation
Ornamental Horticulture
Wildlife and Recreation
Farm Service
Agricultural Service

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**Agricultural Education**
**Washington State University**
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# 1 Occupational Opportunities and Training Needs for Youth for Non-Farm Agricultural Jobs in Washington State

A Report of a Study

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4 Olympia, 4 Washington

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# PREFACE

Rural youth continue to find difficulty in securing employment in their rural communities. Production farming holds much promise for many young people, but many must seek employment outside of the sphere of production agriculture. Saleable skills are needed for those who hope to compete favorably for the many jobs in industry that are agriculturally based and for which training in agriculture is desirable or essential.

Information contained in this publication will be of value to school administrators and teachers for planning sound programs of vocational agriculture to meet the growing demands of the non-farm agricultural occupations. It will also be useful for guidance counselors and students as they jointly plan careers and prepare for job opportunities.

# ACKNOWLEDGMENTS

This report was made possible by a grant of the State Board for Vocational Education, Olympia, to Washington State University for the purpose of conducting a state-wide study of employment opportunities in non-farm agricultural occupations.

Acknowledgment is expressed to the 437 business firms and their employees for their generous response to the requests for information. Appreciation is expressed to the 60 teachers and other persons who assisted in the gathering of information.

Special acknowledgment is expressed to Bert L. Brown, State Director of Agricultural Education, for much assistance in planning and completing this study. Appreciation is also expressed to Joel Magisos, Gilbert A. Long, and Kenneth Owen, Assistant Professors of Agricultural Education, for valuable suggestions and assistance in conducting this study.

# INTRODUCTION

In the United States today approximately 10,000 secondary schools offer courses in vocational agriculture. In these schools, 11,000 teachers provide systematic instruction in agriculture to about 426,000 students. Ever since the passage of the Smith-Hughes Act in 1917, these programs were designed to train persons for farming.

Because of technological changes in agricultural production, there has been a shift of jobs formerly performed on the farm to off-farm, urban centers. Agriculture is continuing its rapidly changing features. It no longer is confined to farming operations, but embraces many businesses and services which are farm or farm product based. The Vocational Education Act of 1963 broadened the scope of vocational agriculture to include not only training for farming, but also the training for non-farm agricultural occupations.

Fewer but larger farms is the continuing trend in U.S. agriculture. Preliminary data for 1966 indicate we have 3,286,000 farms with an average size of 350 acres.[1] In 1959, these totals stood at 4,105,000 and 288.

The changes in estimated national totals have been much greater for the number of farms than for land in farms. Farm numbers during the period 1959 to 1966 declined 20 per cent, while land in farms decreased only 3 per cent.

Discontinuance of small farming enterprises and merging of larger units with existing farms continue as important influences in the change in farm numbers.

Final estimates by the Crop Reporting Board for 1965 gave the total land in farms as 1,155,000 acres, a decrease of less than 1 per cent from 1964.

The great gains since 1940 in hourly output in the production of food and feed grains have not been matched in the production of livestock. However, a special push has been under way in recent years to improve the labor productivity in livestock production. Technical means are now available for increasing output of labor even beyond the large increases made in crop production. It is now possible to produce with two or three hours of work the beef that took 25 hours a few years ago; to care for 15,000 hens with the labor that was once needed for 1,500 hens.[2]

There are 6.5 million workers in production farming and 16.5 million workers in processing, distributing, and providing farm supplies. This 23 million equals more than one-third of the nation's working population.[3] This is the largest single employment complex in America. Most of the workers in this large employment group need preemployment education and training in agriculture. Without these millions of people, and without proper educational opportunities for them, our miraculous system of food and fiber production would not exist.

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[1] The Farm Index, V, No. 3 (March, 1966), p. 13.

[2] Ibid., V, No. 4 (April, 1966), p. 5.

[3] USDA Fact Book of U.S. Agriculture, January, 1965.

In Washington State fewer farmers, but bigger farms, produced $637.3 million worth of agricultural products in 1964. The latest Census Bureau report said the 1964 farm product sales total was $68 million greater than in 1959, the last previous year of a federal census in the state.[4]

The report said 44.7 per cent of Washington's 42,693,760 acres was in farms in 1964. That is about 1 per cent more than in 1959. But, the number of individual farms dropped from 51,574 to 45,574, and the average farm size jumped from 362.9 to 418.1 acres.

The Bureau said the average value per farm* also jumped from $55,075 in 1959 to $65,609. Crop sales accounted for $381 million of the 1964 state farm income total, $27 million above the 1959 figure.

An even greater gain was reported for livestock and livestock products, jumping from $215.4 million in 1959 to $255.6 million in 1964.

Field crops were reported up $12 million to $240.7 million, and sales of fruits and nuts jumped from $11 million to $96.8 million according to the Bureau.

Yakima County led the state's 39 counties in 1964 with sales totaling $118 million. Grant County was second at $63 million.

As our state and nation continue toward more urbanization and as farms become larger and more productive, there will continue to be an increased need for more skill and knowledge, not only in production agriculture but in those occupations related to farming as well.

## Related Studies

Numerous studies dealing with employment in off-farm agricultural occupations have been conducted throughout the United States in the past two years. A number of these were initiated as the result of a conference that was held at Ohio State University in January of 1964 to plan and promote such studies. A brief review of several of these studies is presented in the following paragraphs.

Richard A. Baker[5] found from a sample of 20 Alabama counties that: (1) there were 17 different types of off-farm agricultural businesses, industries, and services operating in the 20 counties; (2) there were 184 different off-farm agricultural occupations in the 20 counties; (3) employers preferred employees with farm or rural background; and (4) data collected from employers projected an 8 per cent increase in number of opportunities available in off-farm agricultural occupations five years hence in the 20 counties.

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[4] Emory Wilcox, 1964 U.S. Census of Agriculture: Washington, Preliminary Report, Series AC 64-Pl (Washington, D.C.: U.S. Department of Commerce, Bureau of Census, September, 1966).

*Farm: 10 acres or more or if less, having sales of $250 or more annually.

[5] Baker, R. A. A Study of Employment Opportunities in Off-Farm Agricultural Occupations in Alabama, Department of Vocational, Technical and Practical Arts Education, Auburn University, Auburn, Alabama, 1965.

William Stevenson,[6] reporting studies of some 700 Oklahoma agriculturally based firms, concluded that certain competencies appeared to be important regardless of the type of business or level of employment. The competencies desired most by employers were:

1. Customer Relations
2. Writing
3. Salesmanship
4. Safety
5. Public Speech
6. Employee Relations with Fellow Workers
7. Experience in Management Decisions and Problem-Solving
8. Inventory, Stock Control, and Warehousing
9. Receiving, Marking, and Shipping
10. Employee-Supervisor Relations.

Roy L. Butler[7] concluded that 644 employees will be needed in ornamental horticultural businesses in Oklahoma in the next five years. Many managers expressed concern regarding the possibility that potential employees with the desired training would not be available.

Mark F. O'Neill[8] determined that there were 539 part-time and full-time employees engaged in nursery, landscape, and tree service businesses in Kent County, Michigan, in 1966.

After interviews with representatives of 121 establishments in Arizona, L. A. Wagley found that there will be a 20 per cent increase in the number of employees who need agricultural training. Service personnel will be in greatest demand; sales personnel will be in second greatest demand. Of the 5,427 total employees in the establishments, 779 or 14.4 per cent currently need training in agriculture. The categories presently requiring the greatest number of employees are "Sales" and "Processing."[9]

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[6] Stevenson, William, "Characteristics and Competencies Desired By Employees in Agricultural Related Businesses," The Agricultural Education Magazine, Volume 38 (April, 1966), pp. 236-37.

[7] Roy Lunn Butler, A Study of Employment Opportunities and Characteristics Desired for Gainful Employment in Ornamental Horticultural Occupations in Oklahoma. Report, M. S., 1965, Oklahoma State University, 35 p. Department of Agricultural Education, Oklahoma State University, Stillwater.

[8] Mark F. O'Neill, A Survey of Occupations in the Nursery, Landscape and Tree Service Businesses in Kent County, Michigan, Michigan Department of Education, Lansing, Michigan, March, 1966.

[9] L. A. Wagley, Educational Requirements for Off-the-Farm Agricultural Occupations in Yuma County, Arizona (unpublished Ed.D. dissertation, University of Arizona, Graduate College, 1964).

C. L. Mondart and C. M. Curtis studied businesses engaged in handling farm products and/or providing Agricultural Services in seven metropolitan areas of Louisiana. They found that 30 per cent of all their workers had agricultural competencies. There is an expected increase of 8.2 per cent of total workers needing these competencies in five years.[10]

H. V. Judge, in a Massachusetts study based on interviews with selected employers of workers in agricultural businesses and using a 10 per cent state-wide sample, drew these conclusions: over one-half of the firms interviewed listed sales as the main function of the firm; over 60 per cent of the employers stated they would be willing to hire high school students as trainees in their firms; there were 30,591 total full-time and part-time workers employed in agricultural businesses, compared with 17,000 persons engaged in production on farms in the state; and 63 per cent of the workers in businesses needed agricultural competencies.[11]

W. L. Griffin interviewed representatives of agriculturally related businesses in Missouri that employed personnel whose knowledge of agriculture was beneficial in their job performance. He found that almost one-half of the firms surveyed were classified under Farm Supplies and Equipment. The majority of the firms surveyed had been in business over 15 years. Almost 70 per cent of the firms were willing to cooperate in a program of hiring high school students as trainees. Methods most frequently used by the employers for obtaining agriculturally oriented personnel were: friends' recommendations, persons dropping in seeking employment, and present employees' recommendations.[12]

H. R. Cushman, V. E. Christensen, and G. R. Bice, in a New York study based on interviews with representatives of businesses and services which have employees needing agricultural competencies, concluded that the occupational groups expecting the largest percentage increase of employees in the next five years were "Farm Machinery Sales and Services" and "Wildlife and Recreation." The occupational group expecting the largest number increase of employees in the next five years was "Farm Supplies and

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[10] C. O. Mondart and C. M. Curtis, Occupational Opportunities and Training Needs for Nonfarm Agricultural Jobs in the Metropolitan Areas of Louisiana (Louisiana State University, College of Agriculture, January, 1965).

[11] H. V. Judge, Competencies Needed in Non-Farm Agricultural Occupations in Massachusetts, Research Study Presented to the Massachusetts Vocational School Directors, Auburn, Massachusetts, March 2, 1965.

[12] W. L. Griffin, Agricultural Occupations Other Than Farming in Missouri, Joint Staff Study--State Department of Education, Teachers of Vocational Agriculture, Agricultural Education Department, University of Missouri, 1964.

Equipment." It was further estimated that an additional 18,950 persons would be employed in these groups as part-time workers.[13]

From the findings of the foregoing and other studies, the following generalizations have been drawn:[14]

1. Almost half the people employed in off-farm agricultural businesses need education or training in agriculture.
2. Employers expect about a 20 per cent increase in the number of employees needing agricultural competencies in the next five years. This parallels the anticipated expansion in the total labor force.
3. Need for greatest numbers of agriculturally trained employees will be in agricultural supplies sales and services, agricultural machinery sales and services, ornamental horticulture services, and livestock and crop food products marketing and distribution.
4. Agricultural competencies needed are mainly determined by the products handled by the business.
5. Many of the agricultural subjects taught to students preparing for production farming also will be needed by students who enter off-farm agricultural occupations.
6. There are many instances in which vocational agriculture may support, or be supported by, other vocational subjects taught.
7. Salesmanship, human relations, and business management are competencies needed by all employees, but in varying degrees.
8. Industrial competency needs generally are low for most fields of activity in agricultural businesses.
9. Beginning salaries and wages for service workers are relatively low. Effective training programs should make it possible for new employees to earn higher incomes.
10. To continue in a vocational-technical education program beyond the twelfth grade is appropriate for many persons, since most employers consider 20 years to be a minimum entry age.
11. Trainees with a farm background or farm experience have a definite advantage when seeking employment in off-farm agricultural businesses.

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[13] H. R. Cushman, V. E. Christensen, and G. R. Bice, Off-Farm Occupations in New York State, A Cooperative Research Project of the Rural Education Department, New York State College of Agriculture, and the Bureau of Agricultural Education, Albany, New York, 1965.

[14] Summary of Research Findings in Off-Farm Agricultural Occupations, Center for Vocational and Technical Education (Columbus, Ohio: The Ohio State University, 1965), pp. v-vi.

12. Occupational titles needing the greatest number of new employees, not including professional workers, in the next five years are:

    Agricultural Machinery Mechanic
    Agricultural Machinery Mechanic's Helper
    Agricultural Machinery Set-up Man
    Agricultural Machinery Salesman
    Agricultural Machinery Partsman
    Agricultural Supplies Salesman
    Agricultural Supplies Serviceman
    Agricultural Supplies Deliveryman
    Greenhouse Grower
    Greenhouse Worker
    Nursery Worker
    Greenskeeper
    Groundskeeper
    Food Products Processman
    Food Products Salesman
    Food Products Department Manager

## Purpose of the Study

The purpose of this study was to secure information about the non-farm agricultural occupations in the state of Washington upon which to provide occupational guidance in agriculture and to aid in planning new programs in agricultural education.

## Specific Objectives of the Study

1. To identify present and emerging agricultural occupations, other than farming, for which vocational and technical education should be available.

2. To determine present and anticipated numbers of employees in these occupations and their job titles.

3. To determine competencies needed for entry and advancement in these occupations.

4. To determine other characteristics of these occupations such as salary, age for entry, physical requirements, and other qualities desired in the employee.

5. To determine the educational needs of those employed in these occupations.

## Definition of Terms

An agricultural occupation, for the purpose of this study, is one in which the workers need competencies (knowledge and skills) in one or more of the primary areas of plant science, animal science, agricultural business management and marketing, and agricultural mechanization.

## Basic Assumptions

The following statements were believed to be generally accepted and were not studied in this project:

1. Employers and the employees themselves could identify the competencies needed for successful job performance.
2. Information secured through this study would provide valuable information for curriculum development for off-farm agricultural occupations training programs.
3. The master list of firms is reasonably complete and representative of the businesses and services which employ persons needing agricultural competencies.

## Major Limitations of the Study

These statements served to circumscribe this study:

1. This study was concerned primarily with those positions which are generally considered below the professional level.
2. The study was limited to firms doing business in Washington that were believed to employ persons that need proficiency in agricultural competencies.
3. The study may have been limited by some variation in the diligence and accuracy of the sixty interviewers.
4. The study may have been limited because there was no single official source at the state level from which to secure a reliable list of firms which employed agriculturally competent personnel.

## Procedure

Data were gathered by means of survey forms. The information was secured through personal interviews with owners, managers, or other persons in companies, businesses, and agencies who were considered best qualified to provide the desired information about the occupations and the employees.

Teachers of agriculture throughout the state prepared lists of the businesses in their areas that in their judgment employed people in the agricultural occupations. The yellow pages in telephone directories were used in compiling these lists. The lists were then combined and alphabetized into a master list of 2,952 firms. It was not possible to determine how accurately this master list represented all of the businesses and service agencies in the state which were in some way agriculturally related and thus employed persons who needed agricultural competencies.

Teachers of agriculture were given an opportunity to volunteer for interviewing. Sixty teachers volunteered and attended a half-day training session following the annual 1965 Vocational Agriculture Teachers Conference at Bellingham. Techniques of interviewing were explained. Teachers were given an opportunity to study the forms and to ask questions in order fully to understand the forms and all other aspects relating to the gathering of information.

From the master list of 2,952 firms a sample of 472 firms was drawn. Assignments for interviewing were then given to the teachers who volunteered. The teachers were paid for each firm interviewed, for mileage, and for other expenses incurred in gathering the information.

# PRESENTATION OF DATA

## General Information, Firms, and Employees

Of 472 samples drawn from the total population, 437 were contacted by interviewers. Of the firms interviewed, 336 employed persons who needed agricultural competencies. Since 75 per cent of the firms in the sample employed persons who needed agricultural competencies, the assumption was made that 75 per cent of the total population had this characteristic. It was thus assumed that the total population of firms that employed agriculturally trained persons was 2,214. The responding sample represented 15 per cent of the total population.

Each of the firms that were included in the study was asked to supply information about the business such as location, kind of product or service dealt with, the per cent of business devoted to agriculture along with other information. Tables 1 through 5 deal with the general information gathered about the businesses and services included in the study.

### Location of Firms by Counties

In Table 1 is a listing of the counties showing the population and the number of farms and the number of firms which were located in each of the counties. Nearly all of the counties in the state are well represented. Some small counties, however, and counties which had relatively few establishments that employ agriculturally trained people were not represented in the sample. Lewis County is an exception and needs special comment. Firms which were located in Lewis County and that were included in the original sample could not be contacted and thus no information was gathered from Lewis County places of business. As one would expect, a large number of firms were drawn in Yakima and King counties. Other counties with fairly large representation were Chelan, Pierce, Skagit, Spokane, Whatcom, and Whitman. There seems to be no uniform pattern of relationship between the number of firms included in the study by counties, either by the number of farms in these counties or by the population in the county.

### Listings of Agricultural Occupations Other Than Farming

Table A-1 lists the various agricultural occupations other than farming by job title. These job titles are taken from the Dictionary of Occupational Titles, and have been grouped into "families" in accordance with the product or service to which they are related.[15] Also shown is the number of employees that were reported in this study in each job title. There were few job titles for which there were no employees reported. For many there was not a sufficient number of responses upon which to base sound calculations.

Responses indicated that in the firms covered by this study, employees served in 158 different job titles. Calculations are based largely on the 49 job titles for which there were adequate numbers of responses.

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[15] Dictionary of Occupational Titles, Definition of Titles, Vol. 1, Washington: Government Printing Office, 1949.

## TABLE 1

## LOCATION OF FIRMS IN SAMPLE BY COUNTIES

| County | Population | Number of Farms | Number of Firms |
|---|---|---|---|
| Adams | 9,929 | 744 | 1 |
| Asotin | 12,909 | 234 | |
| Benton | 62,070 | 1,249 | 5 |
| Chelan | 40,744 | 1,483 | 16 |
| Clallam | 30,022 | 723 | 2 |
| Clark | 93,809 | 2,610 | 8 |
| Columbia | 4,569 | 299 | 1 |
| Cowlitz | 57,801 | 867 | 10 |
| Douglas | 14,890 | 866 | 1 |
| Ferry | 3,889 | 248 | 1 |
| Franklin | 23,342 | 789 | 4 |
| Garfield | 2,976 | 248 | 4 |
| Grant | 46,477 | 1,592 | 8 |
| Grays Harbor | 54,465 | 756 | 4 |
| Island | 19,638 | 441 | |
| Jefferson | 9,639 | 209 | |
| King | 935,014 | 1,825 | 66 |
| Kitsap | 84,176 | 845 | 4 |
| Kittitas | 20,467 | 737 | 6 |
| Klickitat | 13,455 | 656 | 2 |
| Lewis | 41,858 | 2,139 | |
| Lincoln | 10,919 | 935 | 7 |
| Mason | 16,251 | 297 | 3 |
| Okanogan | 25,520 | 1,618 | 6 |
| Pacific | 14,674 | 450 | 1 |
| Pend Oreille | 6,914 | 310 | |
| Pierce | 321,590 | 2,054 | 22 |
| San Juan | 2,872 | 166 | 5 |
| Skagit | 51,350 | 1,540 | 20 |
| Skamania | 5,207 | 161 | |
| Snohomish | 172,199 | 2,413 | 8 |
| Spokane | 278,333 | 2,375 | 19 |
| Stevens | 17,884 | 1,455 | 1 |
| Thurston | 55,049 | 1,193 | 4 |
| Wahkiakum | 3,426 | 278 | |
| Walla Walla | 42,195 | 914 | 6 |
| Whatcom | 70,317 | 2,782 | 15 |
| Whitman | 31,263 | 1,633 | 18 |
| Yakima | 145,112 | 5,440 | 58 |
| Total | | | 336 |

These occupational families had few employees reported: Wildlife and Recreation, Farm Service Occupations, and Agricultural Service Occupations. The reason for this is that firms and services that employed persons largely at the professional level were not included in the study. For example, many of the job titles in the Agricultural Services Occupations are generally filled by college graduates.

The number of responses by "Families of Occupations" are shown in Table 2. Since there was a relatively small number of firms and agencies in the sample that dealt in "services," it is understandable that there would be few responses from the "Service" and "Wildlife and Recreation" occupations.

TABLE 2

NUMBER OF RESPONSES BY FAMILIES OF OCCUPATIONS

| Families of Occupations | Number of Responses | Per Cent |
|---|---|---|
| 100 Farm Machinery Sales and Service Occupations | 185 | 22.0 |
| 200 Farm Supplies and Equipment Occupations | 193 | 22.8 |
| 300 Livestock and Poultry Industries Occupations | 118 | 14.0 |
| 400 Crops, Forestry, and Soil Conservation Occupations | 176 | 20.8 |
| 500 Ornamental Horticulture Occupations | 107 | 12.7 |
| 600 Wildlife and Recreation Occupations | 7 | .8 |
| 700 Farm Service Occupations | 25 | 3.0 |
| 800 Agricultural Service Occupations | 33 | 3.9 |
| Total | 844 | 100.0 |

Per Cent of Firm's Business Devoted to Agriculture

A prerequisite for selecting a firm to be included in the study was that it be agriculturally based and likely to employ persons that have agricultural competencies. It is clear from the data in Table 3 that the majority of the firms dealt exclusively with agriculture. Nearly two-thirds of the firms devoted 90 per cent or more of their business to agriculture. Twelve per cent of the firms devoted less than half of their business to agriculture.

## TABLE 3

## PER CENT OF FIRMS' BUSINESS DEVOTED TO AGRICULTURE

| Per Cent Devoted to Agriculture | Number of Firms |
|---|---|
| 100 | 190 |
| 90 to 99 | 29 |
| 80 to 89 | 18 |
| 70 to 79 | 13 |
| 60 to 69 | 12 |
| Less than 50 | 40 |
| Services--golf course, parks | 15 |
| No response | 19 |

### Positions of Persons Interviewed

It is evident that the interviewers were successful in securing their information from the firms' managements in nearly all cases. Nearly 90 per cent of the respondents were managers, owner-managers, presidents, or sales managers. Details are shown in Table 4.

## TABLE 4

## POSITIONS OF PERSONS INTERVIEWED

| Position | Number Reported |
|---|---|
| Manager | 134 |
| Owner-Manager | 136 |
| President of Corporation | 16 |
| Veterinarian | 10 |
| Sales Manager | 6 |
| Unit Conservationist | 2 |
| Secretary-Treasurer | 5 |
| Vice-President of Corporation | 3 |
| Personnel Manager | 4 |
| Field Representative | 3 |
| Clerk | 2 |
| Greenskeeping Foreman (golf course) | 2 |
| Bookkeeper | 2 |
| All others | 11 |

## Dates of Establishment of Firms in Sample

Nearly one-fourth of the firms responding in this study were established prior to 1930. Just over one-half of the firms were established since 1940. Details can be seen in Table 5.

### TABLE 5

### DATES OF ESTABLISHMENT OF FIRMS IN SAMPLE

| Dates Established | Number of Firms |
|---|---|
| Prior to 1900 | 12 |
| 1901 to 1920 | 25 |
| 1921 to 1930 | 41 |
| 1931 to 1940 | 65 |
| 1941 to 1950 | 70 |
| 1951 to 1960 | 77 |
| 1961 to present | 31 |
| Not reporting | 15 |

# Findings

## Major Products, Services, and Number of Establishments

Examination of the data in Table A-2 reveals that the major products and services of the firms in the study were:

1. Farm Machinery and Equipment Retail Sales and Service
2. Feed, Seed Processing and Retail, and Farm Supplies Retail
3. Farm Chemicals
4. Dairy Products Processors and Distributors
5. Fruit Processing, Sales, Warehousing
6. Nursery Production, Sales, Landscaping Service
7. Flower Production and Sales
8. Agricultural Service Organizations

The 336 firms that supplied the information shown in Table A-2 employed a total of 5,228 persons on a full-time basis.

Few women needing a knowledge of agriculture were employed in the establishments included in this study. All of the 21 women employed were serving in office positions except for one egg candler, one veterinary assistant, and one groomer.

## Number of Employees and Expected Increases

Data in Table A-3 show that in the 336 firms there were employed 1,953 persons who needed competencies in agriculture. Respondents estimated that a total of 2,135 such employees would be needed in these firms by 1970. Based on these figures, it was calculated that there are presently about 13,000 employees in Washington who require competencies in agriculture (sample = 15 per cent of population) and that 14,230 or an increase of 9.5 per cent will be required by 1970.

Table A-3 also contains data which show where increased employment might be expected. Occupations destined for expansion are Machinery Sales and Service area, Grain Elevator Employees, and Landscape Gardeners.

An examination of the figures in Table A-3 also reveals that there is apt to be less demand for Managers of Farm Machinery Sales and Service Businesses, Dairy Plant Employees, and Sales Managers of firms in crops, forestry, and soil conservation.

## Hiring Ages

With respect to hiring ages, the responses, as summarized in Table A-3, show rather clearly that firms generally are not interested in hiring the young man just out of high school. Indications are that most firms have a minimum hiring age of around 23 years. Hiring age of cannery plant employees was 19 years, but many of these are quite likely seasonal employees. Another exception was the hiring age for clerks where the mean in years was reported as 18.

### TABLE 6

### JOB TITLES FOR WHICH HIRING AGES WERE RELATIVELY HIGH

| Code No. | Job Title | No. of Responses | Mean Years |
|---|---|---|---|
| 104 | Farm machinery service center foreman . | 8 | 35.00 |
| 208 | Feed mill . . . . . . . . . . . . . . . . | 3 | 44.00 |
| 202 | Sales manager . . . . . . . . . . . . . . | 3 | 35.00 |
| 222 | Office manager . . . . . . . . . . . . . | 6 | 40.00 |
| 307 | Fieldman . . . . . . . . . . . . . . . . | 3 | 35.00 |
| 332 | Cattle feeder and herdsman . . . . . . . | 2 | 40.00 |
| 333 | Lot manager. . . . . . . . . . . . . . . | 2 | 35.00 |
| 343 | Hatchery manager . . . . . . . . . . . | 3 | 35.00 |
| 401 | Cannery or processing plant fieldman . . | 14 | 36.60 |
| 501 | City, state, or national park employee . . | 3 | 37.50 |
| 609 | Riding instructor. . . . . . . . . . . . | 4 | 38.00 |
| 718 | Rural real estate representative . . . . . | 3 | 37.50 |
| 824 | Farm credit manager. . . . . . . . . . . | 2 | 35.00 |

More details on hiring ages are shown in Table 6 where data indicate that the hiring age for many job titles, especially those having managerial responsibility, are apt to be in the 35 to 40 year range.

## Hours Worked Per Week

The number of hours that employees work per week is shown by job titles in Table A-4. It is evident from an examination of the data in Table A-4 that most job titles, on the average, demand more than a 40-hour week.

Only a few of the job titles such as "Dairy Plant Employee," 36 hours; "Farm Equipment and Supply Salesman," 40 hours; "Office Manager," 40 hours and "Crop Sprayer," 40 hours held to the 40-hour week or less on the average. It would appear that employees in the great majority of the job titles in non-farm agricultural occupations were employed from 44 to 50 hours per week on the average.

Those with management responsibility seemed to fall quite consistently in the range of 46 to 48 hours of work per week.

In Table 7 are listed the job titles of many employees and their mean hours of work per week. Note that many of these job titles have managerial aspects and that many are salesmen.

TABLE 7

NUMBER OF HOURS WORKED PER WEEK FOR JOB TITLES WITH MEANS ABOVE 46

| Code Number and Job Title | | Number Reporting | Mean Hours |
|---|---|---|---|
| 104 | Farm Machinery Service Center Foreman | 8 | 48 |
| 106 | Farm Machinery Parts Manager | 19 | 47 |
| 107 | Farm Machinery Salesman | 22 | 47 |
| 200 | Store Clerk | 4 | 50 |
| 206 | Farm Equipment Serviceman | 5 | 47 |
| 213 | Truck Driver, Fertilizer | 5 | 48 |
| 217 | Chemical Fieldman | 15 | 47 |
| 218 | Assistant Manager (Farm Supplies) | 7 | 50 |
| 302 | Dairy Plant Manager | 6 | 49 |
| 321 | Meat Department Manager | 2 | 48 |
| 324 | Livestock Auction Manager | 4 | 48 |
| 501 | Park Employee | 3 | 47 |
| 502 | Florist | 25 | 47 |
| 507 | Golf Course Superintendent | 7 | 47 |
| 609 | Riding Instructor | 4 | 48 |
| 718 | Rural Real Estate Representative | 3 | 56 |
| 721 | Manager (Farm Service Occupations) | 3 | 52 |
| 724 | Pilot's Helper | 4 | 60 |

## Tenure by Job Titles

There seemed to be a rather wide range in the number of years that employees worked in a particular job title. Examination of the data in

Table A-3 shows quite clearly that those in managerial job titles had longer tenure than most other employees. For example, the office worker in the farm machinery sales and service business had a job tenure of 8.5 years, the mechanic had nearly 10 years, and the manager 18 years. It is likely that in these firms many of the workers who display competence as employees are advanced and eventually attain managerial position.

The means of the years of tenure for several groups were:

a. Farm machinery sales and service, 10.9 years.

b. Farm supplies and equipment, 12.7 years.

c. Crops, forestry, and soil conservation occupations, 15.2 years.

The implication that can be drawn from the data is that many employees have long tenure due to job satisfaction, opportunity for advancement, or for other reasons choose not to leave the firm.

## Monthly Salaries

Monthly salaries of employees are shown by families of occupations and by job titles in Table A-4. One must realize that there is often a wide range of salaries in any given occupation depending on many factors among which may be length of service and the level of performance of the employee. Obviously, managerial positions pay higher salaries even at the "beginning stage." The beginning manager has likely had many years of successful work experience before he becomes a manager.

It should also be recognized that salaries shown in Table A-4 include salaries of some professional people and salaries of many college graduates who usually command higher salaries than employees whose formal education ended with graduation from high school.

Lower salaries seem to prevail on the average for the groups "Ornamental Horticulture Occupations" and "Wildlife and Recreation Occupations" than in other occupational families.

For 565 respondents, it was found that the mean beginning monthly salary was $462 and that the mean of high salaries obtained was $677 per month.

## Activities and Duties by Job Title

The activities and duties associated with each job title are shown in Table A-5. Each respondent was asked to identify the activities and duties of his particular job title by means of an open end question. Nearly all respondents identified three or more activities. Those who had management responsibilities obviously performed a wider range of duties.

Included here are only those job titles in which four or more employees were reported. With respect to the listings of activities and duties, only those mentioned most frequently were included. Although there were many other activities and duties that were mentioned only once, they were deemed of less importance and were thus omitted from the listing.

One might observe from the information in Table A-5 that the activities and duties listed for each job title are those which one would generally expect.

## Residential Background Preference

Upon examination of the data in Table 8, it seems clear that employers prefer a farm background for employees in non-farm agricultural occupations. Collectively, 53 per cent of the responses favored a farm background. Nearly one-third expressed no preference with respect to residential background, and 15 per cent gave rural non-farm as their preference. Only 1 per cent expressed preference for an urban background.

### TABLE 8

### EMPLOYER PREFERENCE OF RESIDENTIAL BACKGROUND FOR NEW EMPLOYEES

| Job Title by Groups | No. of Resp. | Farm | | Rural Non-farm | | Urban | | No. Preference | |
|---|---|---|---|---|---|---|---|---|---|
| | | No. | % | No. | % | No. | % | No. | % |
| Farm Machinery Sales and Service Occupations | 185 | 105 | 57 | 33 | 18 | 3 | 2 | 44 | 23 |
| Farm Supplies and Equipment Occupations | 191 | 119 | 62 | 23 | 12 | 2 | 1 | 47 | 25 |
| Livestock and Poultry Industries Occupations | 115 | 66 | 57 | 7 | 6 | 1 | 1 | 42 | 37 |
| Crops, Forestry, and Soil Conservation Occup. | 175 | 83 | 47 | 30 | 17 | 0 | 0 | 65 | 37 |
| Ornamental Horticulture Occupations | 105 | 37 | 34 | 23 | 21 | 3 | 3 | 42 | 40 |
| Wildlife and Recreation Occupations | 7 | 3 | 43 | 2 | 29 | 0 | 0 | 2 | 29 |
| Farm Service Occupations | 25 | 11 | 44 | 6 | 24 | 1 | 4 | 7 | 28 |
| Agricultural Service Occupations | 34 | 22 | 65 | 3 | 9 | 0 | 0 | 9 | 26 |
| All | 841 | 446 | 53 | 127 | 15 | 10 | | 258 | 31 |

## Educational Level Desired

The educational level desired in employees in the firms cooperating is revealed by the data in Table A-6. It is evident that the person seeking employment in off-farm agricultural occupations should have at least a high school education. Only three per cent of the respondents indicated that high school education was not necessary. Thirty-seven per cent said that high school graduation was sufficient education for entry into the occupation and one-third of the responses indicated that technical education beyond high school or "some college work" would be desirable. It was revealing that nearly one-fourth of the responses stated that college graduation was desired.

The job titles for which there was the most frequent expression of need for the baccalaureate degree were in the managerial or supervisory areas. Other job titles for which the need for a degree was frequently expressed were: fieldmen (7), florists (5), landscape architects (5), office workers (5), farm organization staff (4), livestock or produce buyers (4), agricultural engineers (3), salesmen (3), and dairy plant employees (3).

In view of the large number of responses indicating that education beyond high school is desired for a large portion of employees, and that employers generally desire a more mature employee, it seems clear that the young people who plan to enter employment in non-farm agricultural occupations should plan to enroll for training beyond high school.

## Experience Desired

Many respondents failed to indicate whether experience was desired. Of those who did respond, many expressed the opinion that some kind of work experience in a particular area is desired. The kind of work experience seemed of less importance. Details are shown in Table 9.

## TABLE 9

## EXPERIENCE DESIRED FOR ENTRY

| Kind of Experience | Times Mentioned |
|---|---|
| Experience in particular area . . . | 203 |
| General farm experience. . . . . . | 40 |
| Office and related experience. . . . | 31 |
| Livestock experience . . . . . . . | 17 |
| Farm machinery experience . . . . | 14 |
| Crops production . . . . . . . . . | 9 |
| Truck driving. . . . . . . . . . . | 6 |
| Fruit production . . . . . . . . . | 4 |
| Agricultural services . . . . . . . | 2 |
| Other . . . . . . . . . . . . . . | 16 |

### Restrictions to Employment

Respondents were asked to indicate if they thought there were any restrictions to the entry of people into the various occupations included in the study. Relatively few thought that "licensing or certification," "labor laws," or "labor union restrictions" were barriers to entry. However, one-third of the responses indicated that "physical (age, strength)" was a consideration in entry into the occupation. Table 10 gives details on these responses.

## TABLE 10

## RESTRICTIONS TO EMPLOYMENT

| Restrictions | No. of Responses |
|---|---|
| Licensing or Certification. . . . . . | 47 |
| Labor Law Restrictions . . . . . . | 44 |
| Labor Union Restrictions . . . . . . | 50 |
| Physical (age, strength) . . . . . . | 286 |

## Education Desired To Advance

The question dealing with the education desired to advance on the job did not seem important to respondents as many failed to express their opinions. It was clear that those who responded favored "on-job training" as the best means of training for advancing on the job. Table 11 depicts the responses.

### TABLE 11

### EDUCATION DESIRED TO ADVANCE

| Desired Education | No. of Responses |
|---|---|
| On-job Training. . . . . . . . . . | 219 |
| Agricultural College or Technical Institute . . . . . . | 40 |
| Short Courses Provided by Industry . . . . . . . . . . . | 25 |
| Public School Adult Class . . . . . | 6 |

## Competencies Associated with Job Titles

Respondents were asked to indicate which of the listed competencies would be "desirable" to have and which "essential" to have for the particular job title in question. The responses were given numerical value by calculating the index number[16] of the responses for each job title. A summary of these findings is shown in Table A-7 where all competencies with index numbers of 39 or over are shown in descending order of importance.

An examination of the listings in the table reveals that more competencies are needed by those having managerial responsibility than those who serve as employees without such responsibility.

The more specialized jobs seem to require only a limited number of competencies.

As stated above, only those competencies having index numbers of 39 or more are listed in Table A-7. Of the competencies deemed important enough to be listed, many appear to be important to most of the 46 job titles.

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[16] The index number is defined:

$$\text{Index no.} = \frac{\text{number of "desirable" responses} + 2\ (\text{no. of "essential" resp})}{\text{maximum possible "desirable" responses} + 2\ (\text{"essential" resp})} \times 100$$

These are the competencies and the number of job titles for which they are important:

| | |
|---|---|
| Employee relations with supervisor | 43 |
| Employee relations with fellow workers | 43 |
| Salesmanship and customer relations | 35 |
| Communications | 32 |
| Inventory, stock control, warehousing | 24 |
| Business mathematics | 24 |

## Job Titles Requiring Specific Groups of Competencies for Entry and Advancement

In order to determine the relative importance of each group of competencies to each job title, the competency index number[17] was calculated for each job title. Shown in Table A-8 are the listings of the job titles that need specific groups of competencies. Only those job titles having a competency index of 25 or higher are listed. The lists of job titles are longest for the groups of competencies "Duties of Employees" and "Business Organization and Supervision." These groups of competencies are of such a nature that the respondents, who themselves were in business, felt that the competencies were important in many of the job titles.

The listings in Table A-8 give evidence that relatively few of the job titles reported in this study needed "Trade and Industrial" groups of competencies.

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[17] The competency index numbers which are used in Table A-8 are defined as:

$$\text{Index} = \frac{\text{No. of resp. ''desirable''} + 2\ (\text{no. of resp. ''essential''})}{\text{Maximum possible no. of ''desirable'' resp.} + 2\ (\text{''essen'' resp.})} \quad \times 100$$

For example, for the job title 207, Feed Salesman, the six responses showed that the five Animal Sciences competencies were judged "desirable" 14 times and "essential" 11 times. Thus, 14 and 2 (11) were placed above the line. "Essential" responses were given two times the importance of "desirable." Below the line was placed the total number of possible responses or five times the greatest possible number of responses thus 5 x 2 (6) where 6 is number of times "essential" could be checked and 2 the weighting given to essential. The five is used because there are five competencies and thus five possible responses under Animal Sciences. The calculation for this example, which had six responses, is then:

$$\text{Competency Index} = \frac{14 + 2\ (11)}{5 \times 2\ (6)} \quad \times 100 = 60$$

## Relationships of Competencies

An examination of Table A-9 reveals the relationships that exist among competencies.[18] It should be noted that close relationships exist among specific competencies within groups of competencies. For example, when "Plant propagation, seed production" is important, the other plant science competencies are relatively important.

The data also indicate that the "Trades and Industries" competencies are generally of little importance when "Agricultural" competencies are important. There seems to be relatively close relationship between "Agricultural" competencies and "Business and Distribution" competencies.

## Relationships of Groups of Competencies

A careful study of the patterns of relationships that are displayed in Table A-9 leads to the conclusion that close relationships exist among groups of competencies. For example, when competencies in the group "Plant Sciences" are important, the group of competencies "Business Organization and Supervision" is also important as are the "Duties of Employees" competencies.

Listed below are the groups of competencies that seem to have closer relationship to the underlined group of competencies than to other groups. That is, the group in question is underlined, and listed immediately below are the closely related groups of competencies.

Plant Sciences

Business Organization and Supervision
Duties of Employees
Agricultural Business Management and Marketing
Agricultural Mechanics and Automation

---

[18] Each respondent indicated how important he thought each competency was for performing tasks in the job title in which he served. A value of one was placed on each response of "desirable" and a value of two was given to each response of "essential." The total value of a particular competency was N (number of times the competency was checked "desirable") plus 2 N (number of times the competency was checked "essential"). Thus for the competency, "plant propagation and seed production" the total value of responses was 417. With this as the base of 100 per cent, a determination was made of the percentages that the total value of each other competency had to the base. Thus for the competency "plant propagation and seed production" having a total value of 417, there were sufficient responses to the competency "plant growth and fertilization" to make a total value 344 for a percentage of 83. In other words, the data would indicate that when 100 agricultural employees indicate that the competency "plant propagation and seed production" is important, 83 of them are likely also to indicate that the competency "plant growth and fertilization" is important.

### Animal Sciences

Business Organization and Supervision
Plant Sciences
Duties of Employees
Agricultural Mechanics and Automation
Agricultural Business Management and Marketing

### Agricultural Business Management and Marketing

Management and Economics of Business
Duties of Employees
Business Organization and Supervision

### Agricultural Mechanics and Automation

Plant Sciences
Business Organization and Supervision
Agricultural Business Management and Marketing
Duties of Employees

### Duties of Employees

Business Organization and Supervision
Management and Economics of Business
Agricultural Business Management and Marketing

### Business Organization and Supervision

Duties of Employees
Management and Economics of Business
Agricultural Business Management and Marketing

### Management and Economics of Business

Business Organization and Supervision
Duties of Employees
Agricultural Business Management and Marketing

### Construction Trades

Related Subjects
Metal Trades
Business Organization and Supervision
Agricultural Mechanics and Automation

### Metal Trades

Related Subjects
Agricultural Mechanics and Automation

### Technicians

Related Subjects
Metal Trades
Business Organization and Supervision

### Electrical Trades

Metal Trades
Related Subjects
Construction Trades
Technician

## SUMMARY OF FINDINGS

Calculations based on the sample would indicate that there were probably around 2200 establishments in Washington that employed persons who need competencies in agriculture. These firms were likely employing around 35,000 persons of which 13,000 or 37 per cent needed agricultural competencies.

The 336 firms that cooperated in this study indicated that in the next five years they would probably hire an additional 1200 employees needing agricultural training. This is less than a 10 per cent increase for the five years. Each year the 2200 firms will need, for increased employment, 240 employees. In addition they will probably need nearly 400 employees as annual replacements. Thus it is estimated that around 640 agriculturally trained persons will be needed each year for employment in non-farm agricultural occupation in Washington.

The 768 responses indicated employment in 158 different job titles.

Firms generally did not hire their employees just out of high school, but preferred those who were 23 to 30 years of age. These employees stayed in a given job title from 11 to 15 years on the average.

These employees worked more than the 40-hour week which is now so common in industry. Those with managerial responsibility worked more hours per week, on the average, than those without managerial responsibility.

The mean of all beginning salaries reported was $462 per month, and the mean of all high salaries reported was $677 per month. There was a wide range in salaries.

Persons seeking employment in non-farm agricultural occupations should have at least a high school education. For a large portion of the positions, the employee should have some education beyond high school. Nearly a quarter of the responses indicated that college graduation was desired, especially for management positions.

A farm background and some type of work experience was found to have definite advantage to the person seeking employment in a non-farm agricultural position.

These competencies were considered important for entry into most of the job titles:

1. Employee relations with supervisor.

2. Employee relations with fellow workers.

3. Communications.

4. Salesmanship and customer relations.

Specific competencies which were important for entry into the job titles included in the study were identified for each job title. Also identified were the job titles which needed specific groups of competencies.

Grouping of the competencies included in the study was evident. There was close relationship among the plant science competencies just as there was close relationship among the animal science competencies, the agricultural mechanics competencies, and the agricultural business management competencies.

## CONCLUSIONS

A study of the foregoing data and findings indicates these conclusions:

1. Over one-third of the people employed in non-farm agricultural businesses need education in agriculture.
2. Employers expect nearly a 10 per cent increase in the number of employees needing agricultural competencies in the next five years.
3. The need for a greater number of agriculturally trained employees is expected in Farm Supplies and Equipment Sales, Farm Machinery Sales and Service, and in Ornamental Horticulture occupations.
4. Many of the agricultural subjects taught to students preparing for production farming will be needed by persons who enter non-farm agricultural occupations.
5. There are occasions in which other vocational subjects will support agricultural training programs for non-farm agricultural occupations.
6. Communications, salesmanship and customer relations, employee relations with supervisor, and employee relations with fellow workers are needed by a high percentage of employees.
7. Trades and industrial competency needs generally are low for most fields of activity in agricultural business.
8. Continuing education beyond high school is quite appropriate for many persons, since most employers consider 23 to be the minimum entry age.
9. Persons with a farm background have a definite advantage when seeking employment in non-farm agricultural businesses.
10. Most of the firms interviewed were multifunctional. Purchasing, service, and retailing were the predominant functions among the businesses studied.
11. It is estimated that around 640 new employees who are agriculturally trained will be needed in non-farm agricultural occupations in Washington each year.

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# APPENDIX - A

## LIST OF TABLES

A-1 Partial Listing of Agricultural Occupations Other Than Farming and Ranching, Classified by Agricultural Occupation Families and Number Reported in Each Job Title

A-2 Major Product or Service, Number of Establishments, and Number of Employees

A-3 Number of Persons Now Employed Full-Time and Estimates for 1970, Hiring Age, and Tenure in Agricultural Business in Washington

A-4 Hours Worked Per Week and Salaries

A-5 Activities and Duties by Job Titles

A-6 Educational Level Desired for Persons Entering Agricultural Occupations Other Than Farming

A-7 Competencies Associated with Job Titles

A-8 Job Titles Which Need Specific Groups of Competencies

A-9 Importance of Competencies in Relation to a Given Competency

## TABLE A-1

## PARTIAL LISTING OF AGRICULTURAL OCCUPATIONS OTHER THAN FARMING AND RANCHING, CLASSIFIED BY AGRICULTURAL OCCUPATION FAMILIES AND NUMBER REPORTED IN EACH JOB TITLE

### I. FARM MACHINERY SALES AND SERVICE OCCUPATIONS

| Code No. | Job Title | Number Reported |
|---|---|---|
| 100 | Blacksmith, welder, and general repairman | 11 |
| 101 | Custom farm machine operator | 0 |
| 102 | Farm machinery mechanic's helper | 2 |
| 103 | Farm machinery mechanics | 35 |
| 104 | Farm machinery service center foreman | 8 |
| 105 | Farm machinery parts helper or clerk | 3 |
| 106 | Farm machinery parts manager | 19 |
| 107 | Farm machinery salesman | 22 |
| 108 | Farm machinery fieldman | 1 |
| 109 | Farm tire service operator | 0 |
| 110 | Manager | 23 |
| 111 | Assistant manager | 1 |
| 112 | Office worker | 38 |
| 113 | Equipment operator | 4 |
| 114 | Equipment manager | 4 |
| 115 | Machinist | 3 |
| 116 | Sales manager | 2 |
| 117 | Equipment salesman | 3 |
| 118 | Electrician | 0 |
| 150 | Other | 6 |

### II. FARM SUPPLIES AND EQUIPMENT OCCUPATIONS

| Code No. | Job Title | Number Reported |
|---|---|---|
| 200 | Store clerk | 4 |
| 201 | Farm hardware and equipment store employee | 2 |
| 202 | Sales manager | 3 |
| 203 | Farm hardware and equipment store assistant manager | 3 |
| 204 | Farm hardware and equipment store office worker (bookkeeper, clerk) | 3 |
| 205 | Farm equipment fieldman | 2 |
| 206 | Farm equipment serviceman | 5 |
| 207 | Feed salesman | 6 |
| 208 | Feed mill employee | 3 |
| 209 | Farm cooperative service store employee | 3 |
| 210 | Farm equipment and supplies salesman | 11 |
| 211 | Truck driver for a feed mill or farmer cooperative | 6 |
| 212 | Truck driver for a fuel distributor | 10 |
| 213 | Truck driver for spreading bulk fertilizer or chemical sprays | 5 |
| 214 | Manager | 43 |
| 215 | District manager | 6 |
| 216 | Plant manager | 8 |
| 217 | Chemical fieldman | 15 |
| 218 | Assistant manager | 7 |

TABLE A-1--Continued

| | | |
|---|---|---|
| 219 | Warehouseman | 11 |
| 220 | Salesman | 11 |
| 221 | Buyer | 1 |
| 222 | Office manager | 6 |
| 223 | Driver | 2 |
| 224 | Nutrition consultant and salesman-promotion specialist | 1 |
| 225 | Hay truck driver | 0 |
| 226 | Horticulture specialist | 1 |
| 250 | Other | 13 |
| 251 | Laboratory technician | 2 |
| III. | LIVESTOCK AND POULTRY INDUSTRIES OCCUPATIONS | |
| A. | Dairying, dairy manufacturing and processing | |
| 300 | Dairy herd supervisor | 1 |
| 301 | Dairy plant employee | 13 |
| 302 | Dairy plant manager | 6 |
| 303 | DHIA tester | 3 |
| 304 | Milk sanitarian | 1 |
| 305 | Milk truck driver | 5 |
| 306 | Route salesman | 2 |
| 307 | Fieldman | 3 |
| 308 | Sales manager | 1 |
| 310 | Other | 2 |
| B. | Livestock marketing and processing | |
| 320 | Butcher | 9 |
| 321 | Meat department manager | 2 |
| 322 | Livestock auction employee | 0 |
| 323 | Livestock auctioneers | 0 |
| 324 | Livestock auction manager | 4 |
| 325 | Livestock buyer | 9 |
| 326 | Livestock dealer | 0 |
| 327 | Livestock truck driver | 3 |
| 328 | Slaughter house or locker plant manager | 1 |
| 329 | Slaughter house or locker plant employee | 4 |
| 330 | Stockyard employee | 1 |
| 331 | Office worker | 1 |
| 332 | Cattle feeder and herdsman | 2 |
| 333 | Lot manager | 2 |
| 334 | Lot co-manager | 1 |
| 335 | Salesman | 3 |
| 336 | Other | 1 |
| 337 | Inspector | 1 |
| C. | Poultry industry occupations | |
| 340 | Egg grader | 1 |
| 341 | Egg inspector | 0 |
| 342 | Hatchery employee | 3 |
| 343 | Hatchery manager | 3 |
| 344 | Poultry and egg buyer | 0 |
| 345 | Poultry debeaker | 0 |
| 346 | Poultry processing plant manager | 2 |

TABLE A-1--Continued

| | | |
|---|---|---|
| 347 | Poultry processing plant assistant manager | 0 |
| 348 | Poultry sexer | 0 |
| 349 | Salesman | 2 |
| 350 | Poultry processing laborer | 2 |
| D. | Livestock industry occupations (not elsewhere classified) | |
| 360 | Animal industry laboratory | 1 |
| 361 | Animal industry laboratory assistant | 3 |
| 362 | Animal industry laboratory veterinarian | 0 |
| 363 | Apiary inspector | 0 |
| 364 | Livestock disease control worker | 0 |
| 365 | Veterinarian | 5 |
| 366 | Veterinarian's assistant | 7 |
| 367 | Receptionist | 3 |
| 370 | Other | 1 |
| 375 | Groomer | 4 |
| IV. | CROPS, FORESTRY, AND SOIL CONSERVATION OCCUPATIONS | |
| 400 | Cannery or processing plant employee | 16 |
| 401 | Cannery or processing plant fieldman | 14 |
| 402 | Field crop, fruit and vegetable inspection employee (fieldman) | 10 |
| 403 | Forester | 0 |
| 404 | Fruit and vegetable produce buyer | 4 |
| 405 | Fruit and vegetable employee | 1 |
| 406 | Fruit and vegetable manager | 3 |
| 407 | Grain elevator employee | 9 |
| 408 | Grain elevator manager | 11 |
| 409 | Irrigation ditchrider | 1 |
| 410 | Lumberman or sawmill employee | 1 |
| 411 | Sawmill employee | 5 |
| 412 | Sawmill foreman | 0 |
| 413 | Manager | 32 |
| 414 | Soil conservationist | 3 |
| 415 | Soil conservationist aid | 1 |
| 416 | Soil conservation technician | 2 |
| 417 | State or national forest employee | 0 |
| 418 | Woodsman | 1 |
| 419 | Sales manager | 10 |
| 420 | Soil scientist | 1 |
| 421 | Warehouse manager | 8 |
| 422 | Clerical | 6 |
| 423 | Foreman | 7 |
| 424 | Driver salesman | 0 |
| 425 | Other | 14 |
| 426 | Bookkeeper | 5 |
| 427 | Plant superintendent | 3 |
| 428 | Salesman | 4 |
| 429 | Mechanic | 2 |
| 430 | Production manager | 1 |
| 431 | Orchard foreman | 1 |

## TABLE A-1--Continued

### V. ORNAMENTAL HORTICULTURE OCCUPATIONS

| | | |
|---|---|---|
| 501 | City, state or national park employee | 3 |
| 502 | Florist or flower grower | 25 |
| 503 | Garden center employee | 1 |
| 504 | Garden center manager | 1 |
| 505 | Greenhouse employee | 2 |
| 506 | Greenhouse manager | 2 |
| 507 | Golf course superintendent | 7 |
| 508 | Golf course employee | 7 |
| 509 | Ground maintenance employee | 4 |
| 510 | Landscape architect | 6 |
| 511 | Landscape gardener | 14 |
| 512 | Nursery employee | 7 |
| 513 | Nursery manager | 3 |
| 514 | Tree pruner | 4 |
| 515 | Tree surgeon | 1 |
| 516 | Sales manager | 12 |
| 517 | Laborer | 2 |
| 518 | Ground maintenance superintendent | 2 |
| 519 | Clerk | 0 |
| 520 | Other | 4 |

### VI. WILDLIFE AND RECREATION OCCUPATIONS

| | | |
|---|---|---|
| 601 | Fish warden | 0 |
| 602 | Game bird propagator | 0 |
| 603 | Game management employee | 1 |
| 607 | Game farm employee | 2 |
| 608 | Other | 0 |
| 609 | Riding instructor | 4 |
| 610 | Ranch foreman | 0 |

### VII. FARM SERVICE OCCUPATIONS

| | | |
|---|---|---|
| 701 | Artificial inseminator | 5 |
| 702 | Country butcher | 0 |
| 703 | Crop duster | 1 |
| 704 | Crop pollinator | 0 |
| 705 | Crop sprayer | 3 |
| 706 | Custom farm machine worker | 1 |
| 707 | Farm appraiser | 0 |
| 708 | Farm building painter | 0 |
| 709 | Farm building renovator | 0 |
| 710 | Feed and hammer mill operator | 0 |
| 711 | Field supervisor (A.S.C.) | 0 |
| 712 | Fruit caretaker | 0 |
| 713 | Fruit sprayer | 0 |
| 714 | Lime spreader | 0 |
| 715 | Mobile blacksmith shop operator | 0 |
| 716 | Mobile repair shop operator | 0 |
| 717 | Rural insurance representative | 2 |
| 718 | Rural real estate representative | 3 |

TABLE A-1--Continued

| | | |
|---|---|---|
| 719 | Sheep dipper | 0 |
| 720 | Sheep shearer | 0 |
| 721 | Manager | 3 |
| 722 | Driver-Distributor | 0 |
| 723 | Surveyor | 0 |
| 724 | Pilot's helper | 4 |
| 725 | Other | 2 |
| 726 | Laboratory technician | 1 |
| 727 | Well driller | 0 |
| VIII. | AGRICULTURAL SERVICE OCCUPATIONS | |
| 801 | Farm auctioneer | 1 |
| 802 | A.S.C. field superintendent | 1 |
| 803 | A.S.C. office manager | 2 |
| 804 | A.S.C. checker | 1 |
| 805 | Farm placement representative | 0 |
| 806 | Farm advisory work, consultant | 2 |
| 807 | Field representative for agricultural marketing business | 0 |
| 808 | Agricultural advertising | 0 |
| 809 | Agricultural newspaper and magazine work | 0 |
| 810 | Farm appraiser | 0 |
| 811 | Farmer organization staff person | 4 |
| 812 | Agricultural economist | 0 |
| 813 | Agricultural engineer | 7 |
| 814 | Agricultural journalist | 1 |
| 815 | Agronomist | 1 |
| 816 | Agricultural college instructor | 0 |
| 817 | Entomologist | 0 |
| 818 | Extension work--county agent | 0 |
| 819 | Plant pathologist | 0 |
| 820 | Rural sociologist | 0 |
| 821 | Soil conservationist | 0 |
| 822 | Vocational agriculture instructor | 0 |
| 823 | A.S.C.S. clerk, office | 4 |
| 824 | Farm credit manager | 2 |
| 825 | Farm credit employee | 2 |
| 826 | Farm loans-credit | 3 |
| 827 | Other | 2 |

## TABLE A-2

## MAJOR PRODUCT OR SERVICE, NUMBER OF ESTABLISHMENTS, AND NUMBER OF EMPLOYEES

| Occupational Family and Major Product or Service | Number of Establishments | Total Number of Employees |
|---|---|---|
| Farm Machinery Sales and Service Occupations | | |
| Farm Equipment Service | 10 | 54 |
| Farm Machinery and Chemical Combination Retail Sales | 1 | 45 |
| Farm Machinery and Equipment Retail Sales and Service | 34 | 385 |
| Processing Materials and Equipment | 1 | 25 |
| Farm Equipment Wholesalers | 1 | 11 |
| Farm Supplies and Equipment Occupations | | |
| Consumer, Farm Supply Cooperatives | 7 | 143 |
| Farm Chemicals | 15 | 157 |
| Farm Fuel | 2 | 4 |
| Farm Supply Retail Stores | 10 | 42 |
| Feed Manufacturers, Haulers, and Wholesalers | 6 | 43 |
| Feed, Seed Processing and Retail, Chemicals and Farm Supplies Combination | 26 | 191 |
| Livestock and Poultry Industries Occupations | | |
| Dairy Products Processers and Distributors | 16 | 585 |
| Livestock Sales and Service | 8 | 43 |
| Meat Processing and Wholesale | 14 | 448 |
| Poultry and Poultry Processing and Sales | 4 | 133 |
| Crops, Forestry, and Soil Conservation Occupations | | |
| Food Processing and Distribution | 8 | 286 |
| Forestry | 1 | 5 |
| Fruit Processing, Sales and Warehousing | 23 | 1,486 |

TABLE A-2--Continued

| Occupational Family and Major Product or Service | Number of Establishments | Total Number of Employees |
|---|---|---|
| Grain Processing, Sales and Warehousing | 12 | 100 |
| Lumber and Wood Products | 4 | 193 |
| Other Crops--Processing, Wholesale, Warehousing | 1 | 15 |
| Ornamental Horticulture Occupations | | |
| Flower Production and Sales | 16 | 65 |
| Nursery Production, Sales and Landscaping Service | 33 | 135 |
| Ornamental Plant Service and Turf Care | 10 | 30 |
| Production Agriculture--intensely specialized | 3 | 12 |
| Golf Course, Recreation | 10 | 74 |
| Wildlife and Recreation Occupations | | |
| Game Birds and Riding Instruction | 4 | 16 |
| Farm Service Occupations | | |
| Agricultural Chemical Manufacturers and Wholesale | 3 | 26 |
| Pest Control Service | 6 | 25 |
| Agricultural Service Occupations | | |
| Agricultural Service Occupations | 36 | 366 |
| Service Organizations | 2 | 13 |
| Other | 9 | 70 |
| Totals | 336 | 5,228 |

## TABLE A-3

## NUMBER OF PERSONS NOW EMPLOYED FULL-TIME AND ESTIMATES FOR 1970, HIRING AGE, AND TENURE IN AGRICULTURAL BUSINESSES IN WASHINGTON

| Job Titles | Number Reporting | Now Employed | Expected in 1970 | Hiring Age Mean | Mean Years in Job Title |
|---|---|---|---|---|---|
| 100 Series | | | | | |
| Farm Machinery Sales and Service | | | | | |
| Blacksmith, welder, and general repairman. | 11 | 26 | 51 | 27 | 5.8 |
| Farm machinery mechanics | 35 | 114 | 135 | 26 | 9.7 |
| Farm machinery parts manager | 19 | 24 | 26 | 24 | 10.6 |
| Farm machinery salesman. | 22 | 53 | 66 | 30 | 12.1 |
| Manager | 23 | 32 | 26 | 33 | 18.1 |
| Office worker | 38 | 67 | 78 | 24 | 8.5 |
| Other | 39 | 54 | 71 | | |
| Totals or Means | 187 | 370 | 453 | 27 | 10.9 |
| 200 Series | | | | | |
| Farm Supplies and Equipment | | | | | |
| Farm equipment and supplies salesman | 11 | 23 | 26 | 23 | 13.7 |
| Truck driver for a fuel distributor | 10 | 14 | 19 | 26 | 9.1 |
| Manager | 43 | 50 | 45 | 31 | 14.9 |
| Chemical field man | 15 | 50 | 67 | 29 | 10.2 |
| Warehouseman | 11 | 30 | 38 | 26 | 14.2 |
| Salesman | 11 | 21 | 37 | 25 | 8.2 |
| Other | 92 | 173 | 212 | | |
| Totals or Means | 193 | 361 | 444 | 28 | 12.7 |

TABLE A-3--Continued

| Job Titles | Number Reporting | Now Employed | Expected in 1970 | Hiring Age Mean | Mean Years in Job Title |
|---|---|---|---|---|---|
| 300 Series | | | | | |
| Livestock and Poultry Industries | | | | | |
| Dairy plant employee. . . . . . . . . . . | 13 | 77 | 57 | 25 | 11.9 |
| Other. . . . . . . . . . . . . . . . . | 105 | 434 | 445 | | |
| Totals or Means . . . . . . . . . . . . . | 118 | 511 | 502 | 25 | 11.9 |
| 400 Series | | | | | |
| Crops, Forestry, Soil Conservation | | | | | |
| Cannery or processing plant employee. . . . . . . . . . . . . . . | 16 | 52 | 47 | 19 | 12.4 |
| Cannery or processing plant fieldman . . . . . . . . . . . . . . | 14 | 16 | 17 | 37 | 15.0 |
| Field crop, fruit and vegetable inspection employee. . . . . . . . . . | 10 | 18 | 15 | 25 | 13.6 |
| Grain elevator manager . . . . . . . . . | 11 | 13 | 15 | 30 | 16.1 |
| Manager . . . . . . . . . . . . . . . . | 32 | 34 | 32 | 34 | 16.5 |
| Sales manager. . . . . . . . . . . . . . | 10 | 20 | 7 | | 16.3 |
| Other . . . . . . . . . . . . . . . . | 83 | 199 | 195 | | |
| Totals or Means . . . . . . . . . . . . . | 176 | 352 | 328 | 30 | 15.2 |
| 500 Series | | | | | |
| Ornamental Horticulture | | | | | |
| Florist or flower grower . . . . . . . . . | 25 | 50 | 45 | 25 | 18.8 |
| Landscape architect . . . . . . . . . . . | 14 | 23 | 36 | 27 | 11.7 |
| Sales manager. . . . . . . . . . . . . . | 12 | 25 | 20 | 22 | 12.5 |
| Other . . . . . . . . . . . . . . . . | 56 | 86 | 113 | | |
| Totals or Means . . . . . . . . . . . . . | 107 | 184 | 214 | 25 | 15.4 |

TABLE A-3--Continued

| Job Titles | Number Reporting | Now Employed | Expected in 1970 | Hiring Age Mean | Mean Years in Job Title |
|---|---|---|---|---|---|
| 600 Series | | | | | |
| Wildlife and Recreation. . . . . . . . . . | 7 | 7 | 12 | | |
| 700 Series | | | | | |
| Farm Service . . . . . . . . . . . . . . | 25 | 141 | 149 | | |
| 800 Series | | | | | |
| Agricultural Service . . . . . . . . . . . | 33 | 27 | 33 | | |
| Totals . . . . . . . . . . . . . . . . | | 1,953 | 2,135 | | |

## TABLE A-4

## HOURS WORKED PER WEEK AND SALARIES

| Code Number and Job Title | Number Reported | Mean Hours Worked Per Week | Mean Salary Per Month | |
|---|---|---|---|---|
| | | | Begin. | High |
| I. FARM MACHINERY SALES AND SERVICES | | | | |
| 100 Blacksmith, Welder, and General Repairman | 9 | 42 | $362 | $475 |
| 103 Farm Machinery Mechanics | 33 | 44 | 389 | 554 |
| 104 Farm Machinery Service Center | 8 | 48 | 563 | 756 |
| 106 Farm Machinery Parts Manager | 19 | 47 | 408 | 579 |
| 107 Farm Machinery Salesman | 20 | 47 | 371 | 709 |
| 110 Manager | 21 | 45 | 606 | 1,838 |
| 112 Office Worker | 31 | 41 | 377 | 505 |
| 150 Other | 6 | 47 | 475 | 625 |
| Totals or Means | 147 | | $428 | $760 |
| II. FARM SUPPLIES AND EQUIPMENT | | | | |
| 207 Feed Salesman | 6 | 46 | $325 | $500 |
| 210 Farm Equipment and Supply Salesman | 11 | 40 | 375 | 533 |
| 211 Truck Driver, Feed Mill | 5 | 41 | 355 | 413 |
| 212 Truck Driver, Distributor | 7 | 44 | 400 | 469 |
| 213 Truck Driver, Bulk Fertilizer or Chemical | 5 | 48 | 500 | 583 |
| 214 Manager | 43 | 46 | 497 | 737 |
| 215 District Manager | 6 | 44 | 691 | 854 |
| 216 Plant Manager | 8 | 46 | 480 | 670 |
| 217 Chemical Field Man | 15 | 50 | 429 | 566 |
| 218 Assistant Manager | 7 | 50 | 357 | 451 |
| 219 Warehouseman | 8 | 42 | 388 | 538 |
| 220 Salesman | 11 | 46 | 475 | 617 |
| 222 Office Manager | 6 | 40 | 575 | 725 |
| 250 Other | 12 | 41 | 407 | 561 |
| Totals or Means | 150 | | $519 | $620 |

TABLE A-4--*Continued*

| Code Number and Job Title | | Number Reported | Mean Hours Worked Per Week | Mean Salary Per Month Begin. | Mean Salary Per Month High |
|---|---|---|---|---|---|
| III. | LIVESTOCK AND POULTRY INDUSTRIES | | | | |
| 301 | Dairy Plant Employee | 4 | 36 | $500 | $666 |
| 302 | Dairy Plant Manager | 6 | 49 | 488 | 600 |
| 320 | Butcher | 9 | 42 | 400 | 500 |
| 325 | Livestock Buyer | 9 | 44 | 533 | 967 |
| 365 | Veterinarian, Professional | 5 | 56 | 750 | 1,500 |
| 366 | Veterinarian's Assistant | 7 | 48 | 292 | 313 |
| 367 | Receptionist | 5 | 40 | 330 | 340 |
| Totals or Means | | 45 | | $461 | $685 |
| IV. | CROPS, FORESTRY, AND SOIL CONSERVATION | | | | |
| 400 | Cannery or Processing Plant Employee | 6 | 42 | $475 | $605 |
| 401 | Cannery or Processing Plant Fieldman | 14 | 44 | 469 | 664 |
| 402 | Field Crop, Fruit, and Vegetable Inspector | 9 | 43 | 438 | 563 |
| 407 | Grain Elevator Employee | 5 | 41 | 400 | 550 |
| 408 | Grain Elevator Manager | 11 | 47 | 446 | 606 |
| 413 | Manager | 31 | 47 | 535 | 811 |
| 419 | Sales Manager | 10 | 45 | 600 | 800 |
| 421 | Warehouse Manager | 8 | 44 | 456 | 638 |
| 423 | Foreman | 6 | 45 | 500 | 500 |
| 425 | Other | 9 | 41 | 375 | 550 |
| Totals or Means | | 109 | | $485 | $675 |

## TABLE A-4--Continued

| Code Number and Job Title | | Number Reported | Mean Hours Worked Per Week | Mean Salary Per Month Begin. | Mean Salary Per Month High |
|---|---|---|---|---|---|
| V. | ORNAMENTAL HORTICULTURE | | | | |
| 502 | Florist or Flower Grower | 25 | 48 | $319 | $531 |
| 507 | Golf Course Superintendent | 6 | 47 | 500 | 963 |
| 508 | Golf Course Employee | 7 | 45 | 367 | 550 |
| 510 | Landscape Architect | 6 | 47 | 533 | 933 |
| 511 | Landscape Gardener | 14 | 42 | 425 | 575 |
| 512 | Nursery Employee | 6 | 46 | 298 | 468 |
| 516 | Sales Manager | 11 | 44 | 383 | 533 |
| Totals or Means | | 75 | | $382 | $602 |
| VI. | WILDLIFE AND RECREATION | | | | |
| 603 | Game Management Employees | 1 | 50 | $490 | $550 |
| 607 | Game Farm Employees | 2 | 50 | 435 | 470 |
| 609 | Riding Instructor | 4 | 48 | 200 | 713 |
| Totals or Means | | 7 | | $308 | $620 |
| VII. | FARM SERVICE | | | | |
| 701 | Artificial Inseminator | 5 | 44 | $465 | $765 |
| 705 | Crop Sprayer | 3 | 40 | 666 | 980 |
| 718 | Rural Real Estate Representative | 3 | 56 | 270 | 830 |
| 721 | Manager | 3 | 52 | 563 | 938 |
| 724 | Pilots Helper | 3 | 60 | 298 | 298 |
| Totals or Means | | 17 | | $453 | $763 |
| VIII. | AGRICULTURAL SERVICE | | | | |
| 811 | Farmer Organization Staff Person | 4 | 40 | $625 | $833 |
| 813 | Agricultural Engineer | 6 | 41 | 675 | 850 |
| 826 | Farm Loans, Credit | 5 | 41 | 375 | 575 |
| Totals or Means | | 15 | | $561 | $754 |
| Total and Means of all reporting | | 565 | | $462 | $677 |

## TABLE A-5

## ACTIVITIES AND DUTIES BY JOB TITLES

| Code No. and Job Titles | No. in Job Title | No. of Responses | Duties Reported, Descending Order | No. of Times Mentioned |
|---|---|---|---|---|
| 112 Office Worker | 38 | 98 | Keep records | 24 |
| | | | Inventory control | 12 |
| | | | Correspondence | 11 |
| | | | Answer phone | 10 |
| | | | Communications | 7 |
| | | | Fiscal controls | 7 |
| | | | Make out statements | 6 |
| | | | Receptionist | 6 |
| | | | Sell products and merchandise | 6 |
| 200 Country Store Clerk | 4 | 13 | Sell products and merchandise | 3 |
| 202 Sales Manager | 4 | 12 | Sell products and merchandise | 3 |
| | | | Advertising | 2 |
| 206 Farm Equipment Serviceman | 5 | 10 | Machinery maintenance | 5 |
| 207 Feed Salesman | 6 | 15 | Sell products and merchandise | 5 |
| | | | Figure bills | 2 |
| | | | Delivery and pick up | 2 |
| 210 Farm Equipment and Supplies Salesman | 11 | 32 | Sell products and merchandise | 4 |
| | | | Selling equipment | 3 |
| | | | Comb. bookkeeping, collection, sales | 3 |
| | | | Suggest rates, method of fert. appl. | 3 |
| | | | Sell chemicals | 3 |
| | | | Suggest rates, methods of herb., fung. application | 2 |
| | | | Suggest rates, methods of insecticide application | 2 |

TABLE A-5--Continued

| Code No. and Job Titles | No. in Job Title | No. of Responses | Duties Reported, Descending Order | No. of Times Mentioned |
|---|---|---|---|---|
| 211 Truck Driver, Feed Mill or Coop. | 6 | 16 | Truck driver | 6 |
| | | | Delivery and pick up | 4 |
| | | | Sell products and merchandise | 2 |
| 212 Truck Driver for a Fuel Distributor | 10 | 30 | Sell products and merchandise | 6 |
| | | | Truck driver | 5 |
| | | | Keep records | 4 |
| | | | Figure bills | 3 |
| | | | Delivery and pick up | 3 |
| | | | Service appliances | 2 |
| | | | Machinery maintenance | 2 |
| 213 Truck Driver, Spread Bulk Fertilizer | 5 | 13 | Suggest rates, methods of fert. application | 2 |
| | | | Truck driver | 1 |
| 214 Manager | 43 | 119 | General management | 29 |
| | | | Supervise personnel | 14 |
| | | | Purchase and sales of supplies | 8 |
| | | | Sell products and merchandise | 6 |
| | | | Supervision of accounting, finances | 6 |
| | | | Inventory control | 5 |
| | | | Keep records | 5 |
| | | | Sell chemicals | 4 |
| | | | Supervise oper. of pack., store, ship. | 4 |
| 215 District Manager | 6 | 16 | Supervise personnel | 4 |
| | | | Inventory control | 2 |
| | | | Sell products and merchandise | 2 |

TABLE A-5--Continued

| Code No. and Job Titles | No. in Job Title | No. of Responses | Duties Reported, Descending Order | No. of Times Mentioned |
|---|---|---|---|---|
| 216 Plant Manager | 8 | 21 | Supervise personnel | 4 |
| | | | Inventory control | 3 |
| | | | Maintain and manage warehouse and plant | 3 |
| | | | General management | 2 |
| | | | Comb. bookkeeping, collection, sales | 2 |
| 217 Chemical Fieldman | 15 | 39 | Suggest rates, methods of fert. application | 7 |
| | | | Application of chemicals | 5 |
| | | | Link between processor and grower | 4 |
| | | | Suggest rates, methods of herb, fung. application | 4 |
| | | | Suggest rates, methods of insecticide application | 4 |
| | | | Sell chemicals | 3 |
| 218 Assistant Manager | 7 | 18 | General management | 2 |
| | | | Keep records | 2 |
| | | | Machinery maintenance | 2 |
| 219 Warehouseman | 11 | 33 | Warehouse machinery operation | 5 |
| | | | Bag and package products | 4 |
| | | | Supervise oper. of pack., stor., ship. | 4 |
| | | | Load and unload cars | 4 |
| | | | Run processing equipment | 3 |
| 220 Chemical Salesman | 11 | 21 | Sell chemicals | 8 |
| | | | Selling equipment | 2 |
| 222 Office Manager | 6 | 19 | Supervision of accounting, finances | 3 |
| | | | Supervise personnel | 2 |
| | | | General management | 2 |
| | | | Answer phone | 2 |

### TABLE A-5--Continued

| Code No. and Job Titles | No. in Job Title | No. of Responses | Duties Reported, Descending Order | No. of Times Mentioned |
|---|---|---|---|---|
| | | | Correspondence | 2 |
| | | | Keep records | 2 |
| 301 Dairy Plant Employee | 13 | 22 | Processing dairy products | 10 |
| | | | Run processing equipment | 6 |
| 302 Dairy Plant Manager | 6 | 12 | General management | 3 |
| | | | Supervise personnel | 2 |
| 305 Milk Truck Driver | 5 | 10 | Delivery and pick up | 4 |
| | | | Truck driver | 3 |
| 320 Butcher | 9 | 15 | Butchering, meat cutting | 9 |
| | | | Run processing equipment | 2 |
| 325 Livestock Buyer | 9 | 14 | Buying from grower | 5 |
| | | | Sales-buying-customer relations | 2 |
| | | | Truck driver | 2 |
| 366 Veterinarian's Assistant | 7 | 16 | Assist veterinarian | 5 |
| | | | General clean up | 4 |
| 400 Cannery or Processing Plant Employee | 16 | 24 | Bag and package products | 5 |
| | | | Produce inspection and grading | 4 |
| | | | Maintain and manage warehouse and plant | 3 |
| | | | Load and unload cars | 3 |
| | | | Supervise oper. of pack., stor., ship. | 2 |
| 401 Cannery or Processing Plant Fieldman | 14 | 31 | Link between processor and grower | 10 |
| | | | Suggest rates, methods of insecticide application | 3 |

TABLE A-5--Continued

| Code No. and Job Titles | No. in Job Title | No. of Responses | Duties Reported, Descending Order | No. of Times Mentioned |
|---|---|---|---|---|
| | | | Suggest rates, methods of herb, fung. application | 3 |
| | | | Suggest rates, methods of fert. application | 3 |
| | | | Field collection work | 3 |
| 402 Field Crop, Fruit, Vegetable Inspection Employee | 10 | 17 | Fruit quality control | 5 |
| | | | Link between processor or grower | 3 |
| | | | Supervise oper. of pack., stor., ship. | 3 |
| | | | Produce inspection and grading | 2 |
| 407 Grain Elevator Employee Warehouse Employees | 9 | 23 | Load and unload cars | 5 |
| | | | General clean up | 4 |
| | | | Warehouse machinery operation | 3 |
| 408 Grain Elevator Manager-Warehouse Foreman | 11 | 26 | Supervise oper. of pack., stor., ship | 5 |
| | | | Supervise personnel | 4 |
| | | | Keep records | 2 |
| | | | Warehouse machinery operation | 2 |
| 413 Manager | 32 | 86 | General management | 26 |
| | | | Supervise personnel | 7 |
| | | | Keep records | 6 |
| | | | Maintain and manage warehouse & plant | 4 |
| | | | Sell products and merchandise | 4 |
| | | | Buying from grower | 4 |
| | | | Professional | 4 |
| | | | Buying and selling of fresh goods | 3 |
| | | | Field equipment operations | 2 |

TABLE A-5--Continued

| Code No. and Job Titles | No. in Job Title | No. of Responses | Duties Reported, Descending Order | No. of Times Mentioned |
|---|---|---|---|---|
| 419 Sales Manager | 10 | 15 | Sell products and merchandise | 4 |
| | | | Buying and selling of fresh goods | 2 |
| | | | Purchase and sales of supplies | 2 |
| | | | Professional | 2 |
| 421 Warehouse Foreman | 8 | 19 | Maintain and manage warehouse and plant | 4 |
| | | | Supervise oper. of pack., stor., ship | 3 |
| | | | Supervise personnel | 3 |
| | | | Warehouse machinery operation | 3 |
| 422 Clerical | 6 | 17 | Answer phone | 4 |
| | | | Keep records | 4 |
| | | | Correspondence | 3 |
| 423 Foreman | 7 | 13 | Maintain and manage warehouse and plant | 2 |
| | | | Supervise oper. of pack., stor., ship. | 2 |
| | | | Machinery maintenance | 2 |
| | | | Fruit quality control | 2 |
| | | | Load and unload cars | 2 |
| 426 Bookkeeper | 5 | 10 | Keep records | 5 |
| 502 Florist or Flower Grower | 25 | 77 | Arrange flowers | 15 |
| | | | Delivery and pick up | 11 |
| | | | Comb. bookkeeping, collection, sales | 6 |
| | | | Plant propagation | 6 |
| | | | Sell products and merchandise | 5 |
| | | | Making window displays | 5 |
| | | | Keep records | 4 |
| | | | Application of chemicals | 4 |
| 507 Golf Course Superintendent | 7 | 19 | Management of grounds | 2 |
| | | | General management | 2 |

TABLE A-5--Continued

| Code No. and Job Titles | No. in Job Title | No. of Responses | Duties Reported, Descending Order | No. of Times Mentioned |
|---|---|---|---|---|
| | | | Management-customer relations | 2 |
| | | | Keep records | 2 |
| | | | Comb. bookkeeping, collection, sales | 2 |
| | | | Instruction of customers | 2 |
| 508 Golf Course Employee | 7 | 21 | Turf care | 4 |
| | | | Maintenance of grounds | 3 |
| | | | Plant propagation | 3 |
| | | | Application of chemicals | 3 |
| 510 Landscape Architect | 6 | 10 | Landscape--layout and design | 6 |
| 511 Landscape Gardener | 14 | 27 | Landscape--layout and design | 5 |
| | | | Horticulture labor | 3 |
| | | | Plant propagation | 3 |
| | | | Horticultural service | 3 |
| | | | Pruning and trimming | 2 |
| | | | Field equipment operations | 2 |
| 512 Nursery Employee | 7 | 11 | Horticultural labor | 2 |
| | | | Plant propagation | 2 |
| 516 Nursery Salesman | 10 | 30 | Sell products and merchandise | 6 |
| | | | Making window displays | 3 |
| | | | Comb. bookkeeping, collection, sales | 3 |
| | | | Arrange flowers | 3 |
| | | | Horticultural management of greenhouse | 2 |
| 701 Artificial Inseminator | 5 | 9 | Keep records | 3 |
| | | | Artificial inseminator | 2 |

TABLE A-5--Continued

| Code No. and Job Titles | No. in Job Title | No. of Responses | Duties Reported, Descending Order | No. of Times Mentioned |
|---|---|---|---|---|
| 813 Agricultural Engineer | 7 | 12 | Machinery maintenance | 3 |
| | | | Designing and building equipment | 2 |
| | | | Professional | 2 |

## TABLE A-6

## EDUCATIONAL LEVEL DESIRED FOR PERSONS ENTERING AGRICULTURAL OCCUPATIONS OTHER THAN FARMING

| Code No. and Job Title | No. of Responses | Less Than H.S. | H.S. | Tech. | Some College | Jr. Col. Grad | Col. Grad. | M.S. | DVM PhD |
|---|---|---|---|---|---|---|---|---|---|
| FARM MACHINERY SALES AND SERVICE OCCUPATIONS | | | | | | | | | |
| 103 Farm Machinery Mechanics. . . . . | 34 | | 15 | 18 | | 1 | | | |
| 107 Farm Machinery Salesman . . . . . | 22 | | 9 | 3 | 9 | | 1 | | |
| 110 Manager . . . . . . . . . . . . . . | 23 | 1 | 3 | 5 | 7 | | 7 | | |
| 112 Office Worker . . . . . . . . . . . | 38 | | 14 | 10 | 8 | 1 | 5 | | |
| Totals . . . . . . | 117 | 1 | 41 | 36 | 24 | 2 | 13 | | |
| FARM SUPPLIES AND EQUIPMENT OCCUPATIONS | | | | | | | | | |
| 210 Farm Equipment and Supplies Salesman . . . . . . . . . . . | 11 | | 6 | 1 | 3 | | 1 | | |
| 214 Manager . . . . . . . . . . . . . . | 43 | 1 | 8 | 2 | 8 | 3 | 21 | | |
| 217 Chemical Fieldman . . . . . . . . | 15 | | 5 | 1 | 4 | 1 | 4 | | |
| 250 Other . . . . . . . . . . . . . . . | 13 | | 3 | 1 | 2 | | 7 | | |
| Totals . . . . . . | 82 | 1 | 22 | 5 | 17 | 4 | 33 | | |
| LIVESTOCK AND POULTRY INDUSTRIES OCCUPATIONS | | | | | | | | | |
| 301 Dairy Plant Employee . . . . . . . | 13 | 1 | 8 | 1 | | | 3 | | |
| 320 Butcher. . . . . . . . . . . . . . | 9 | 1 | 7 | 1 | | | | | |
| 325 Livestock Buyer . . . . . . . . . . | 9 | 1 | 4 | | 2 | 1 | 2 | | |
| 366 Veterinarian's Assistant . . . . . . | 7 | 1 | 4 | 1 | | | | 1 | |
| Totals . . . . . . | 38 | 3 | 23 | 3 | 2 | 1 | 5 | 1 | |

TABLE A-6--Continued

| Code No. and Job Title | No. of Responses | Less Than H.S. | H.S. | Tech. | Some College | Jr. Col. Grad. | Col. Grad. | M.S. | DVM PhD |
|---|---|---|---|---|---|---|---|---|---|
| CROPS, FORESTRY, AND SOIL CONSERVATION OCCUPATIONS | | | | | | | | | |
| 400 Cannery or Processing Plant Employee. . . . . . . . . . . . . | 16 | 5 | 9 | 2 | | | | | |
| 401 Cannery or Processing Plant Fieldman. . . . . . . . . . . . . | 15 | | 4 | 1 | 3 | | 7 | | |
| 408 Grain Elevator Manager. . . . . . | 11 | | 6 | 1 | 2 | | 2 | | |
| 413 Manager . . . . . . . . . . . . . | 33 | | 4 | | 11 | 1 | 15 | 2 | |
| 425 Other . . . . . . . . . . . . . . | 14 | 1 | 3 | 1 | 4 | | 5 | | |
| Totals . . . . . . | 89 | 6 | 26 | 5 | 20 | 1 | 29 | 2 | |
| ORNAMENTAL HORTICULTURE OCCUPATIONS | | | | | | | | | |
| 502 Florist or Flower Grower . . . . . | 25 | 2 | 11 | 4 | 3 | | 5 | | |
| 511 Landscape Gardener . . . . . . . . | 14 | | 8 | 3 | 1 | 1 | 1 | | |
| 516 Sales Manager . . . . . . . . . . | 11 | | 3 | | 5 | 1 | 2 | | |
| Totals . . . . . . | 50 | 2 | 22 | 7 | 9 | 2 | 10 | | |
| AGRICULTURAL SERVICE OCCUPATIONS | | | | | | | | | |
| 811 Farm Appraiser . . . . . . . . . . | 4 | | | | | | 4 | | |
| 813 Agricultural Engineer. . . . . . . | 7 | | | 2 | 2 | 1 | 3 | | |
| 823 ASCS Clerk, Office . . . . . . . . | 4 | | 2 | | 1 | 1 | 1 | | |
| Totals . . . . . . | 15 | | 2 | 2 | 3 | 2 | 8 | | |
| Totals of All Responses . . . . . . . . . | 843 | 28 | 314 | 127 | 165 | 27 | 173 | 3 | 7 |
| Per Cent of Total | 100 | 3.23 | 37.3 | 15.1 | 19.6 | 2.85 | 20.52 | .35 | .83 |

TABLE A-7

COMPETENCIES ASSOCIATED WITH JOB TITLES

| For Entry Into These Job Titles | No. of Responses | These Competencies are Important (in descending order) | Index Number |
|---|---|---|---|
| Farm Machinery Sales and Service | | | |
| Blacksmith, Welder, and General Repairman | 9 | 1. Welding | 61 |
| | | 2. Employee relations with supervisor | 56 |
| | | 3. Employee relations with fellow workers | 50 |
| | | 4. Communications | 50 |
| | | 5. Blueprint reading | 44 |
| | | 6. Technical and service manuals | 39 |
| | | 7. Machinist | 39 |
| | | 8. Salesmanship and customer relations | 39 |
| Farm Machinery Mechanics | 33 | 1. Engines, repair and maintenance | 70 |
| | | 2. Farm power and machinery | 65 |
| | | 3. Employee relations with fellow workers | 65 |
| | | 4. Welding | 64 |
| | | 5. Hydraulics and pneumatics | 58 |
| | | 6. Employee relations with supervisor | 56 |
| | | 7. Machinist | 55 |
| | | 8. Technical and service manuals | 55 |
| | | 9. Salesmanship and customer relations | 52 |
| Farm Machinery Service Center Foreman | 8 | 1. Farm power and machinery | 69 |
| | | 2. Employee relations with fellow workers | 63 |
| | | 3. Employee relations with supervisor | 56 |
| | | 4. Communications | 50 |
| | | 5. Machinist | 50 |
| | | 6. Hydraulics and pneumatics | 50 |
| | | 7. Technical and service manuals | 50 |
| | | 8. Salesmanship and customer relations | 44 |
| | | 9. Engines, repair and maintenance | 44 |
| Farm Machinery Parts Manager | 19 | 1. Salesmanship and customer relations | 71 |
| | | 2. Employee relations with fellow workers | 71 |
| | | 3. Business mathematics | 68 |
| | | 4. Inventory, stock control, warehousing | 68 |
| | | 5. Employee relations with supervisor | 66 |
| | | 6. Receiving, marking, shipping | 61 |
| | | 7. Buying and merchandising | 61 |
| | | 8. Window and store display | 58 |
| | | 9. Farm power and machinery | 53 |
| | | 10. Communications | 53 |
| | | 11. Internal business organizations | 47 |
| | | 12. Technical and service manuals | 47 |
| | | 13. Bookkeeping, office machines | 42 |
| | | 14. Engines, repair and maintenance | 39 |
| Farm Machinery Salesman | 20 | 1. Salesmanship and customer relations | 78 |
| | | 2. Employee relations with supervisor | 73 |
| | | 3. Employee relations with fellow workers | 73 |
| | | 4. Farm power and machinery | 60 |
| | | 5. Communications | 58 |
| | | 6. Business mathematics | 58 |
| | | 7. Technical and service manuals | 48 |
| | | 8. Buying and merchandising | 45 |
| | | 9. Trade relationship, promotion | 45 |
| | | 10. Hydraulics and pneumatics | 43 |
| | | 11. Engines, repair and maintenance | 40 |

TABLE A-7--Continued

| For Entry Into These Job Titles | No. of Responses | These Competencies are Important (in descending order) | Index Number |
|---|---|---|---|
| Manager | 21 | 1. Salesmanship and customer relations | 90 |
| | | 2. Buying and merchandising | 83 |
| | | 3. Employee relations with fellow workers | 81 |
| | | 4. Business mathematics | 81 |
| | | 5. Inventory, stock control, warehousing | 79 |
| | | 6. Capital management, financing | 79 |
| | | 7. Employee relations with supervisor | 74 |
| | | 8. Farm power and machinery | 74 |
| | | 9. Budgeting, records and analysis | 69 |
| | | 10. Internal business organizations | 69 |
| | | 11. Communications | 67 |
| | | 12. Trade relationships, promotion | 67 |
| | | 13. Receiving, marking, shipping | 60 |
| | | 14. Marketing practices | 60 |
| | | 15. Technical and service manuals | 60 |
| | | 16. Bookkeeping, office machines | 60 |
| | | 17. Labor management | 57 |
| | | 18. Farm financing credit, taxes, etc. | 57 |
| | | 19. Government, reg (ICC, PUC, FICA) | 57 |
| | | 20. Accounting taxes | 57 |
| | | 21. Agricultural policy | 55 |
| | | 22. Window and store display | 52 |
| | | 23. Engines, repair and maintenance | 52 |
| Office Worker | 31 | 1. Employee relations with fellow workers | 73 |
| | | 2. Business mathematics | 71 |
| | | 3. Bookkeeping, office machines | 71 |
| | | 4. Salesmanship and customer relations | 68 |
| | | 5. Employee relations with supervisor | 66 |
| | | 6. Communications | 61 |
| | | 7. Inventory, stock control, warehousing | 53 |
| | | 8. Accounting, taxes | 53 |
| | | 9. Internal business organizations | 48 |
| | | 10. Budgeting, records and analysis | 48 |
| | | 11. Buying, and merchandising | 47 |
| | | 12. Farm financing (Credit, taxes, etc.) | 45 |
| | | 13. Receiving, marking, shipping | 45 |
| | | 14. Government reg (ICC, PUC, FICA) | 40 |
| Farm Supplies and Equipment | | | |
| Farm Equipment Serviceman | 5 | 1. Farm power and machinery | 60 |
| | | 2. Employee relations with supervisor | 50 |
| | | 3. Employee relations with fellow workers | 50 |
| | | 4. Painting and finishing | 50 |
| | | 5. Plumbing | 50 |
| | | 6. Engines, repair and maintenance | 50 |
| | | 7. Machinist | 50 |
| | | 8. Sheet metal, tinsmith, coppersmith | 40 |
| | | 9. Welding | 40 |
| | | 10. Hydraulics and pneumatics | 40 |
| | | 11. Electrical wiring | 40 |
| Feed Salesman | 6 | 1. Salesmanship and customer relations | 83 |
| | | 2. Business mathematics | 83 |
| | | 3. Employee relations with supervisor | 75 |
| | | 4. Employee relations with fellow sorkers | 67 |
| | | 5. Animal growth, feeding | 67 |
| | | 6. Health and sanitation | 67 |

TABLE A-7--Continued

| For Entry Into These Job Titles | No. of Responses | These Competencies are Important (in descending order) | Index Number |
|---|---|---|---|
| | | 7. Window and store display | 58 |
| | | 8. Communications | 58 |
| | | 9. Receiving, marking, shipping | 58 |
| | | 10. Housing and equipment | 58 |
| | | 11. Performing production practices | 58 |
| | | 12. Animal breeding, selection | 50 |
| | | 13. Inventory, stock control, warehousing | 50 |
| Farm Equipment and Supplies Salesman | 11 | 1. Plant growth, fertilization | 68 |
| | | 2. Control of insects, diseases, weeds | 59 |
| | | 3. Salesmanship and customer relations | 55 |
| | | 4. Employee relations with fellow workers | 55 |
| | | 5. Employee relations with supervisor | 50 |
| | | 6. Business mathematics | 45 |
| Truck Driver for a Feed Mill or Farmer Coop | 5 | 1. Salesmanship and customer relations | 40 |
| Truck Driver for a Fuel Distributor | 7 | 1. Employee relations with supervisor | 64 |
| | | 2. Employee relations with fellow workers | 64 |
| Truck Driver for Spreading Bulk Fertilizer | 5 | 1. Employee relations with supervisor | 70 |
| | | 2. Employee relations with fellow workers | 60 |
| | | 3. Inventory, stock control, warehousing | 50 |
| | | 4. Technical and service manuals | 50 |
| | | 5. Farm power and machinery | 40 |
| | | 6. Receiving, marking, and shipping | 40 |
| Manager | 43 | 1. Salesmanship and customer relations | 79 |
| | | 2. Inventory, stock control, warehousing | 77 |
| | | 3. Employee relations with fellow workers | 74 |
| | | 4. Employee relations with supervisor | 74 |
| | | 5. Buying and merchandising | 74 |
| | | 6. Business mathematics | 71 |
| | | 7. Communications | 69 |
| | | 8. Internal business organizations | 66 |
| | | 9. Receiving, marking, shipping | 64 |
| | | 10. Trade relationships, promotion | 62 |
| | | 11. Bookkeeping, office machines | 60 |
| | | 12. Capital management, financing | 59 |
| | | 13. Marketing practices | 57 |
| | | 14. Plant growth, fertilization | 57 |
| | | 15. Budgeting, records and analysis | 56 |
| | | 16. Control of insects, diseases, weeds | 55 |
| | | 17. Labor management | 52 |
| | | 18. Accounting, taxes | 51 |
| | | 19. Government reg (ICC, PUC, FICA) | 51 |
| | | 20. Farm financing (credit, taxes, etc.) | 48 |
| | | 21. Performing production practices | 45 |
| District Manager | 6 | 1. Salesmanship and customer relations | 75 |
| | | 2. Employee relations with supervisor | 75 |
| | | 3. Employee relations with fellow workers | 75 |
| | | 4. Internal business organizations | 75 |
| | | 5. Marketing practices | 75 |
| | | 6. Communications | 58 |
| | | 7. Buying and merchandising | 58 |
| | | 8. Trade relationship, promotion | 58 |
| | | 9. Inventory, stock control, warehousing | 50 |

TABLE A-7--Continued

| For Entry Into These Job Titles | No. of Responses | These Competencies are Important (in descending order) | Index Number |
|---|---|---|---|
| | | 10. Business mathematics | 50 |
| | | 11. Agricultural policy | 50 |
| | | 12. Capital management, financing | 50 |
| Plant Manager | 8 | 1. Employee relations with supervisor | 81 |
| | | 2. Employee relations with fellow workers | 81 |
| | | 3. Receiving, marking, shipping | 75 |
| | | 4. Salesmanship and customer relations | 69 |
| | | 5. Inventory, stock control, warehousing | 69 |
| | | 6. Communications | 63 |
| | | 7. Business mathematics | 63 |
| | | 8. Buying and merchandising | 56 |
| | | 9. Internal business organizations | 50 |
| | | 10. Labor management | 50 |
| | | 11. Government reg. (ICC, PUC, FICA) | 50 |
| | | 12. Trade relationships, promotion | 44 |
| | | 13. Marketing practices | 44 |
| Chemical Field Man | 15 | 1. Control of insects, diseases, weeds | 63 |
| | | 2. Salesmanship and customer relations | 60 |
| | | 3. Employee relations with fellow workers | 57 |
| | | 4. Employee relations with supervisor | 53 |
| | | 5. Communications | 53 |
| | | 6. Performing production practices | 47 |
| | | 7. Plant growth, fertilization | 47 |
| | | 8. Soil and water management | 40 |
| | | 9. Business mathematics | 40 |
| Assistant Manager | 7 | 1. Salesmanship and customer relations | 79 |
| | | 2. Business mathematics | 79 |
| | | 3. Receiving, marking, shipping | 64 |
| | | 4. Labor management | 64 |
| | | 5. Farm power and machinery | 64 |
| | | 6. Bookkeeping, office machines | 64 |
| | | 7. Employee relations with supervisor | 64 |
| | | 8. Employee relations with fellow workers | 64 |
| | | 9. Inventory, stock control, warehousing | 64 |
| | | 10. Internal business organizations | 57 |
| | | 11. Communications | 57 |
| | | 12. Marketing practices | 57 |
| | | 13. Buying and merchandising | 50 |
| | | 14. Capital management, financing | 50 |
| | | 15. Accounting, taxes | 50 |
| Warehouseman | 8 | 1. Employee relations with supervisor | 69 |
| | | 2. Employee relations with fellow workers | 69 |
| | | 3. Receiving, marking, shipping | 56 |
| | | 4. Communications | 50 |
| | | 5. Salesmanship and customer relations | 50 |
| | | 6. Inventory, stock control, warehousing | 50 |
| Salesman | 11 | 1. Salesmanship and customer relations | 68 |
| | | 2. Employee relations with supervisor | 59 |
| | | 3. Employee relations with fellow workers | 59 |
| | | 4. Performing production practices | 55 |
| | | 5. Communications | 50 |
| | | 6. Business mathematics | 50 |
| | | 7. Plant growth, fertilization | 45 |
| | | 8. Receiving, marking, shipping | 45 |

TABLE A-7--Continued

| For Entry Into These Job Titles | No. of Responses | These Competencies are Important (in descending order) | Index Number |
|---|---|---|---|
| Office Manager | 6 | 1. Employee relations with supervisor | 83 |
| | | 2. Employee relations with fellow workers | 83 |
| | | 3. Inventory, stock control, warehousing | 75 |
| | | 4. Accounting, taxes | 75 |
| | | 5. Business mathematics | 75 |
| | | 6. Communications | 67 |
| | | 7. Bookkeeping, office machines | 67 |
| | | 8. Marketing practices | 67 |
| | | 9. Internal business organizations | 67 |
| | | 10. Government Reg. (ICC, PUC, FICA) | 67 |
| | | 11. Budgeting, records and analysis. | 58 |
| | | 12. Farm financing (credit, taxes, etc) | 58 |
| | | 13. Labor management | 58 |
| | | 14. Agricultural policy | 58 |
| | | 15. Buying and merchandising | 58 |
| | | 16. Capital management, financing | 58 |
| | | 17. Trade relationships, promotion | 50 |
| | | 18. Salesmanship and customer relations | 50 |
| Livestock and Poultry Industries | | | |
| Dairy Plant Manager | 6 | 1. Employee relations with supervisor | 58 |
| | | 2. Employee relations with fellow workers | 58 |
| | | 3. Inventory, stock control, warehousing | 58 |
| | | 4. Government reg. (ICC, PUC, FICA) | 58 |
| | | 5. Business mathematics | 58 |
| | | 6. Buying and merchandising | 58 |
| | | 7. Communications | 42 |
| | | 8. Receiving, marking, shipping | 42 |
| | | 9. Salesmanship and customer relations | 42 |
| | | 10. Budgeting, records, and analysis | 42 |
| | | 11. Internal business organizations | 42 |
| | | 12. Building maintenance | 42 |
| Butcher | 9 | 1. Health and sanitation | 61 |
| | | 2. Employee relations with supervisor | 56 |
| | | 3. Employee relations with fellow workers | 56 |
| | | 4. Receiving, marking, shipping | 44 |
| | | 5. Salesmanship and customer relations | 39 |
| | | 6. Performing production practices | 39 |
| Livestock Buyer | 9 | 1. Employee relations with fellow workers | 83 |
| | | 2. Employee relations with supervisor | 78 |
| | | 3. Buying and merchandising | 78 |
| | | 4. Health and sanitation | 78 |
| | | 5. Animal growth, feeding | 72 |
| | | 6. Salesmanship and customer relations | 72 |
| | | 7. Animal breeding, selection | 67 |
| | | 8. Receiving, marking, shipping | 56 |
| | | 9. Communications | 56 |
| | | 10. Business mathematics | 56 |
| | | 11. Marketing practices | 56 |
| | | 12. Housing and equipment | 44 |
| | | 13. Inventory, stock control, warehousing | 39 |
| Veterinarian | 5 | 1. Animal growth, feeding | 70 |
| | | 2. Health and sanitation | 70 |
| | | 3. Animal breeding, selection | 60 |
| | | 4. Housing and equipment | 60 |

TABLE A-7--Continued

| For Entry Into These Job Titles | No. of Responses | These Competencies are Important (in descending order) | Index Number |
|---|---|---|---|
| | | 5. Salesmanship and customer relations | 60 |
| | | 6. Employee relations with supervisor | 50 |
| | | 7. Buying and merchandising | 50 |
| | | 8. Inventory, stock control, warehousing | 50 |
| | | 9. Budgeting, records and analysis | 40 |
| | | 10. Marketing practices | 40 |
| | | 11. Agricultural policy | 40 |
| | | 12. Performing production practices | 40 |
| | | 13. Communications | 40 |
| | | 14. Business mathematics | 40 |
| | | 15. Bookkeeping, office machines | 40 |
| | | 16. Internal business organizations | 40 |
| Veterinarian Assistant | 7 | 1. Communications | 64 |
| | | 2. Employee relations with fellow workers | 64 |
| | | 3. Salesmanship and customer relations | 43 |
| | | 4. Health and sanitation | 43 |
| Receptionist | 5 | 1. Communications | 50 |
| | | 2. Employee relations with fellow workers | 50 |
| | | 3. Bookkeeping, office machines | 50 |
| Crops, Forestry, and Soil Cons. | | | |
| Cannery or Processing Plant Employee | 6 | 1. Employee relations with supervisor | 58 |
| | | 2. Employee relations with fellow workers | 58 |
| | | 3. Inventory, stock control, warehousing | 58 |
| | | 4. Quality control | 50 |
| | | 5. Building maintenance | 42 |
| | | 6. Heating, vent, refrig, and air cond. | 42 |
| Cannery or Processing Plant Fieldman | 14 | 1. Employee relations with supervisor | 79 |
| | | 2. Employee relations with fellow workers | 79 |
| | | 3. Control of insects, diseases, weeds | 79 |
| | | 4. Plant growth, fertilization | 75 |
| | | 5. Performing production practices | 68 |
| | | 6. Soil and water management | 64 |
| | | 7. Plant propagation, seed production | 61 |
| | | 8. Marketing practices | 50 |
| | | 9. Agricultural policy | 50 |
| | | 10. Salesmanship and customer relations | 50 |
| | | 11. Communications | 46 |
| | | 12. Budgeting, records and analysis | 46 |
| | | 13. Farm financing (credit, taxes, etc.) | 46 |
| | | 14. Labor management | 43 |
| | | 15. Buying and merchandising | 43 |
| | | 16. Quality control | 39 |
| Field Crop, Fruit and Vegetable Inspection Employee | 9 | 1. Employee relations with fellow workers | 67 |
| | | 2. Employee relations with supervisor | 61 |
| | | 3. Control of insects, diseases, weeds | 50 |
| | | 4. Government reg (ICC, PUC, FICA) | 44 |
| | | 5. Quality control | 39 |
| Grain Elevator Employee | 5 | 1. Employee relations with supervisor | 50 |
| | | 2. Employee relations with fellow workers | 40 |
| | | 3. Building maintenance | 40 |
| | | 4. Receiving marking, shipping | 40 |
| | | 5. Communications | 40 |

TABLE A-7--Continued

| For Entry Into These Job Titles | No. of Responses | These Competencies are Important (in descending order) | Index Number |
|---|---|---|---|
| | | 6. Carpentry and cabinetmaking | 40 |
| | | 7. Sheet metal, tinsmith, coppersmith | 40 |
| | | 8. Technical and service manuals | 40 |
| Grain Elevator Manager | 11 | 1. Employee relations with fellow workers | 68 |
| | | 2. Employee relations with supervisor | 64 |
| | | 3. Receiving, marking, shipping | 64 |
| | | 4. Inventory, stock control, warehousing | 59 |
| | | 5. Communications | 55 |
| | | 6. Business mathematics | 55 |
| | | 7. Salesmanship and customer relations | 50 |
| | | 8. Internal business organizations | 45 |
| | | 9. Building maintenance | 41 |
| Manager | 31 | 1. Budgeting, records and analysis | 85 |
| | | 2. Labor management | 77 |
| | | 3. Employee relations with fellow workers | 77 |
| | | 4. Capital management, financing | 77 |
| | | 5. Inventory, stock control, warehousing | 74 |
| | | 6. Buying and merchandising | 73 |
| | | 7. Marketing practices | 73 |
| | | 8. Agricultural policy | 69 |
| | | 9. Business mathematics | 69 |
| | | 10. Employee relations with supervisor | 69 |
| | | 11. Internal business organizations | 69 |
| | | 12. Farm financing (credit, taxes, etc.) | 65 |
| | | 13. Accounting, taxes | 63 |
| | | 14. Communications | 61 |
| | | 15. Bookkeeping, office machines | 60 |
| | | 16. Receiving, marking, shipping | 58 |
| | | 17. Salesmanship and customer relations | 58 |
| | | 18. Farm power and machinery | 58 |
| | | 19. Trade relationships, promotion | 58 |
| | | 20. Performing production practices | 53 |
| | | 21. Control of insects, diseases, weeds | 52 |
| | | 22. Plant propagation, seed production | 50 |
| | | 23. Government reg. (ICC, PUC, FICA) | 50 |
| | | 24. Plant growth, fertilization | 47 |
| | | 25. Soil and water management | 45 |
| Sales Manager | 10 | 1. Budgeting, records and analysis | 55 |
| | | 2. Marketing practices | 55 |
| | | 3. Agricultural Policy | 55 |
| | | 4. Salesmanship and customer relations | 55 |
| | | 5. Business mathematics | 55 |
| | | 6. Buying and merchandising | 55 |
| | | 7. Communications | 50 |
| | | 8. Employee relations with supervisor | 50 |
| | | 9. Employee relations with fellow workers | 50 |
| | | 10. Inventory, stock control, warehousing | 50 |
| | | 11. Government reg. (ICC, PUC, FICA) | 50 |
| | | 12. Capital management, financing | 45 |
| | | 13. Trade relationships, promotion | 45 |
| | | 14. Internal business organizations | 40 |
| | | 15. Receiving, marking, shipping | 40 |

### TABLE A-7--Continued

| For Entry Into These Job Titles | No. of Responses | These Competencies are Important (in descending order) | Index Number |
|---|---|---|---|
| Warehouse manager | 8 | 1. Employee relations with supervisor | 63 |
| | | 2. Employee relations with fellow workers | 63 |
| | | 3. Receiving, marking, shipping | 50 |
| | | 4. Labor management | 50 |
| | | 5. Inventory, stock control, warehousing | 44 |
| | | 6. Building maintenance | 44 |
| Foreman | 6 | 1. Employee relations with supervisor | 67 |
| | | 2. Employee relations with fellow workers | 67 |
| | | 3. Building maintenance | 58 |
| | | 4. Inventory, stock control, warehousing | 50 |
| | | 5. Internal business organizations | 50 |
| | | 6. Quality control | 50 |
| | | 7. Heating, vent. refrig., and air cond. | 42 |
| | | 8. Salesmanship and customer relations | 42 |
| | | 9. Technical and service manuals | 42 |
| Ornamental Horticulture | | | |
| Florist or Flower Grower | 25 | 1. Salesmanship and customer relations | 84 |
| | | 2. Employee relations with supervisor | 74 |
| | | 3. Employee relations with fellow workers | 74 |
| | | 4. Communications | 68 |
| | | 5. Business mathematics | 66 |
| | | 6. Buying and merchandising | 60 |
| | | 7. Window and store display | 56 |
| | | 8. Plant growth, fertilization | 56 |
| | | 9. Control of insects, diseases, weeds | 56 |
| | | 10. Receiving, marking, shipping | 54 |
| | | 11. Inventory, stock control, warehousing | 52 |
| | | 12. Soil and water management | 50 |
| | | 13. Plant propagation, seed production | 46 |
| | | 14. Bookkeeping, office machines | 46 |
| | | 15. Trade relationships, promotion | 46 |
| | | 16. Performing production practices | 44 |
| Golf Course Superintendent | 6 | 1. Plant growth, fertilization | 83 |
| | | 2. Control of insects, diseases, weeds | 83 |
| | | 3. Soil and water management | 83 |
| | | 4. Performing production practices | 75 |
| | | 5. Business mathematics | 67 |
| | | 6. Communications | 58 |
| | | 7. Plant propagation, seed production | 58 |
| | | 8. Employee relations with supervisor | 58 |
| | | 9. Employee relations with fellow workers | 50 |
| | | 10. Buying and merchandising | 50 |
| | | 11. Inventory, stock control, warehousing | 50 |
| | | 12. Internal business organizations | 50 |
| | | 13. Bookkeeping, office machines | 50 |
| | | 14. Budgeting, records and analysis | 50 |
| | | 15. Labor management | 50 |
| | | 16. Soil structures (ditches, ponds, etc.) | 42 |
| | | 17. Capital management, financing | 42 |
| | | 18. Accounting, taxes | 42 |

TABLE A-7--Continued

| For Entry Into These Job Titles | No. of Responses | These Competencies are Important (in descending order) | Index Number |
|---|---|---|---|
| Golf Course Employee | 7 | 1. Employee relations with supervisor | 64 |
| | | 2. Employee relations with fellow workers | 64 |
| | | 3. Control of insects, diseases, weeds | 50 |
| | | 4. Soil and water management | 50 |
| | | 5. Plant growth, fertilization | 43 |
| | | 6. Performing production practices | 43 |
| | | 7. Farm power and machinery | 43 |
| Landscape Architect | 6 | 1. Control of insects, diseases, weeds | 83 |
| | | 2. Plant growth, fertilization | 75 |
| | | 3. Employee relations with supervisor | 75 |
| | | 4. Employee relations with fellow workers | 75 |
| | | 5. Drafting (design, building, elevations) | 75 |
| | | 6. Blueprint reading | 75 |
| | | 7. Technical and Service manuals | 75 |
| | | 8. Soil and water management | 67 |
| | | 9. Salesmanship and customer relations | 67 |
| | | 10. Business mathematics | 67 |
| | | 11. Bookkeeping, office machines | 67 |
| | | 12. Buying and merchandising | 67 |
| | | 13. Internal business organizations | 58 |
| | | 14. Plant propagation, seed production | 50 |
| | | 15. Inventory, stock control, warehousing | 50 |
| | | 16. Carpentry and cabinetmaking | 50 |
| | | 17. Hydraulics and pneumatics | 50 |
| | | 18. Performing production practices | 42 |
| | | 19. Farm power and machinery | 42 |
| | | 20. Soil structures (ditches, ponds, etc.) | 42 |
| | | 21. Accounting, taxes | 42 |
| | | 22. Trade relationships, promotion | 42 |
| | | 23. Plumbing | 42 |
| Landscape Gardener | 14 | 1. Plant growth, fertilization | 68 |
| | | 2. Soil and water management | 64 |
| | | 3. Employee relations with fellow workers | 61 |
| | | 4. Employee relations with supervisor | 57 |
| | | 5. Control of insects, diseases, weeds | 57 |
| | | 6. Communications | 50 |
| | | 7. Salesmanship and customer relations | 50 |
| | | 8. Masonry | 43 |
| | | 9. Technical and service manuals | 39 |
| Nursery Employee | 6 | 1. Employee relations with fellow workers | 50 |
| | | 2. Employee relations with supervisor | 50 |
| | | 3. Communications | 50 |
| | | 4. Control of insects, diseases, weeds | 50 |
| | | 5. Performing production practices | 50 |
| | | 6. Soil and water management | 42 |
| | | 7. Plant growth, fertilization | 42 |
| | | 8. Marketing practices | 42 |
| | | 9. Salesmanship and customer relations | 42 |

TABLE A-7--Continued

| For Entry Into These Job Titles | No. of Responses | These Competencies are Important (in descending order) | Index Number |
|---|---|---|---|
| Sales Manager | 11 | 1. Salesmanship and customer relations | 82 |
| | | 2. Communications | 73 |
| | | 3. Employee relations with supervisor | 73 |
| | | 4. Employee relations with fellow workers | 68 |
| | | 5. Business mathematics | 64 |
| | | 6. Control of insects, diseases, weeds | 59 |
| | | 7. Inventory, stock control, warehousing | 55 |
| | | 8. Plant growth, fertilization | 55 |
| | | 9. Receiving, marking, shipping | 50 |
| | | 10. Buying and merchandising | 50 |
| | | 11. Soil and water management | 45 |
| | | 12. Performing production practices | 41 |
| | | 13. Window and store display | 41 |
| | | 14. Internal business organizations | 41 |
| Farm Service Occupations | | | |
| Artificial Inseminator | 5 | 1. Communications | 60 |
| | | 2. Salesmanship and customer relations | 60 |
| | | 3. Animal breeding, selection | 60 |
| | | 4. Health and sanitation | 50 |
| | | 5. Performing production practices | 50 |
| | | 6. Employee relations with supervisor | 50 |
| | | 7. Animal growth, feeding | 40 |
| | | 8. Housing and equipment | 40 |
| | | 9. Bookkeeping, office machines | 40 |
| | | 10. Inventory, stock control, warehousing | 40 |
| Agricultural Service Occup. | | | |
| Agricultural Engineerer | 6 | 1. Employee relations with supervisor | 67 |
| | | 2. Employee relations with fellow workers | 67 |
| | | 3. Blueprint reading | 67 |
| | | 4. Technical and service manuals | 50 |
| | | 5. Hydraulic and pneumatics | 50 |
| | | 6. Soil structures (ditches, ponds, etc.) | 42 |
| | | 7. Government reg. (ICC, PUC, FICA) | 42 |
| | | 8. Drafting (design, building, elevations) | 42 |
| Farm Loans - Credit | 5 | 1. Employee relations with fellow workers | 70 |
| | | 2. Business mathematics | 70 |
| | | 3. Employee relations with supervisor | 60 |
| | | 4. Salesmanship and customer relations | 60 |
| | | 5. Capital management, financing | 60 |
| | | 6. Accounting, taxes | 60 |
| | | 7. Communications | 50 |
| | | 8. Bookkeeping, office machines | 50 |
| | | 9. Government reg. (ICC, PUC, FICA) | 50 |
| | | 10. Internal business organizations | 40 |

## TABLE A-8

## JOB TITLES WHICH NEED SPECIFIC GROUPS OF COMPETENCIES

| These Job Titles | | | Need these Groups of Competencies |
|---|---|---|---|
| Code No. | Job Title | Comp. Index | |
| 401 | Fieldman, Cannery or processing | 69 | |
| 507 | Golf course superintendent | 66 | |
| 510 | Landscape architect | 63 | |
| 210 | Salesman, farm equipment and supplies | 52 | A. Agricultural Competencies |
| 502 | Florist or flower grower | 52 | 1. Plant Sciences |
| 511 | Landscape gardner | 50 | a. Plant propagation, seed production |
| 214 | Mgr., Farm supply and Equipment | 49 | b. Plant growth, fertilization |
| 413 | Mgr., Crops, Forestry Occup. | 47 | c. Control of insects, diseases, weeds |
| 217 | Fieldman, chemical | 46 | d. Soil and Water Management |
| 508 | Golf course employee | 44 | e. Performing production practices |
| 516 | Sales mgr., ornamental horticulture | 43 | |
| 220 | Salesman, general | 42 | |
| 512 | Nursery employee | 37 | |
| 402 | Field crop, fruit & veg. insp, employee | 31 | |
| 107 | Salesman, farm machinery | 26 | |
| 110 | Manager, farm machinery sales | 26 | |
| 408 | Grain elevator manager | 26 | |
| 421 | Warehouse manager | 25 | |
| 365 | Veterinarian | 60 | 2. Animal Sciences |
| 325 | Livestock buyer | 60 | a. Animal breeding, selection |
| 207 | Feed salesman | 60 | b. Animal growth, feeding |
| 701 | Artificial inseminator | 48 | c. Health and sanitation |
| 320 | Butcher | 33 | d. Housing and equipment |
| 214 | Manager, farm supplies | 29 | e. Performing production |
| 222 | Office manager | 28 | |
| 210 | Salesman, supplies and equipment | 28 | |
| 413 | Mgr; crops, forestry, and soil cons. | 71 | |
| 222 | Off. mgr; farm supp. and equip. occup | 60 | |
| 811 | Farmer organization staff person | 57 | |
| 110 | Mgr; farm machinery sales and ser. occup. | 54 | 3. Agricultural Business Management and Marketing |
| 214 | Mgr; farm supp. and equip. occup | 51 | |
| 207 | Farm equipment serviceman | 50 | a. Budgeting, records, and analysis |
| 419 | Sales mgr; crops, forestry, & soil cons. | 48 | b. Farm Financing (credit, taxes, etc.) |
| 401 | Cannery or processing plant fieldman | 47 | c. Labor management |
| 218 | Asst. mgr; farm supp. and equipment occup. | 47 | d. Marketing practices |
| 114 | Equipment manager | 45 | e. Agricultural Policy |
| 216 | Plant mgr; farm supp. and equip. occup | 40 | |
| 325 | Livestock buyer | 33 | |
| 112 | Off. worker; farm mach. sales & serv. occup. | 32 | |
| 408 | Grain elevator manager | 30 | |
| 107 | Farm machinery salesman | 30 | |
| 106 | Farm machinery parts manager | 30 | |
| 220 | Salesman; farm supplies and equip. occup. | 29 | |
| 210 | Farm equipment and supplies salesman | 27 | |
| 421 | Warehouse manager | 27 | |

TABLE A-8--Continued

| These Job Titles | | | Need These Groups of Competencies |
|---|---|---|---|
| Code No. | Job Title | Comp. Index | |
| 114 | Equipment manager | 42 | 4. Agricultural Mechanics and Automation<br>a. Farm power and machinery<br>b. Farm buildings and conveniences<br>c. Rural electrification and processing<br>d. Soil structures (ditches, ponds, etc.)<br>e. Farm construction and maintenance |
| 110 | Mgr; farm machinery sales and service | 40 | |
| 107 | Farm machinery salesman | 34 | |
| 218 | Asst. manager; farm supp. and equip. | 34 | |
| 216 | Plant mgr; farm supplies and equip. | 31 | |
| 401 | Cannery or processing plant fieldman | 30 | |
| 408 | Grain elevator manager | 30 | |
| 210 | Farm equipment and supplies salesman | 28 | |
| 106 | Farm machinery parts manager | 27 | |
| 413 | Mgr; crops, forestry, and soil cons. | 27 | |
| 510 | Landscape architect | 26 | |
| 104 | Farm machinery service center foreman | 25 | |
| 214 | Mgr; farm supplies and equip. | 64 | B. Business and Distribution Competencies<br>1. Duties of Employees<br>a. Communications<br>b. Receiving, marking, shipping<br>c. Window and store display<br>d. Salesmanship and customer relations<br>e. Business mathematics<br>f. Bookkeeping, office machines |
| 218 | Asst. manager; farm supp. and equip. | 63 | |
| 110 | Mgr; farm machinery sales and serv. | 62 | |
| 502 | Florist or flower grower | 62 | |
| 207 | Feed Salesman | 59 | |
| 106 | Farm machinery parts manager | 58 | |
| 216 | Plant manager; farm supp. and equip. | 58 | |
| 516 | Sales mgr; orngmental horticulture | 54 | |
| 413 | Mgr; crops, forestry, and soil cons. | 52 | |
| 200 | Store clerk | 50 | |
| 112 | Off. worker; farm machinery sales & serv. | 48 | |
| 222 | Office manager | 47 | |
| 510 | Landscape architect | 47 | |
| 325 | Livestock buyer | 44 | |
| 408 | Grain elevator manager | 43 | |
| 107 | Farm machinery salesman | 42 | |
| 329 | Slaughter house or locker plant employee | 41 | |
| 404 | Fruit and vegetable produce buyer | 41 | |
| 419 | Sales mgr; crops, forestry, and soil cons. | 41 | |
| 507 | Golf course superintendent | 41 | |
| 220 | Salesman; farm supplies and equip. | 40 | |
| 422 | Clerical | 33 | |
| 210 | Farm equipment and supplies salesman | 32 | |
| 421 | Warehouse manager | 29 | |
| 217 | Chemical fieldman | 28 | |
| 320 | Butcher | 26 | |
| 214 | Mgr; farm supplies and equip. | 73 | 2. Business Organization and Supervision<br>a. Employee relations with supervisor<br>b. Employee relations with fellow workers<br>c. Buying and merchandising<br>d. Inventory, stock control, warehousing<br>e. Internal business organization |
| 222 | Office mgr; farm supplies and equip. | 73 | |
| 413 | Mgr; crops, forestry, and soil cons. | 73 | |
| 110 | Mgr; farm machinery sales and serv. | 70 | |
| 216 | Plant mgr; farm supplies and equip. | 67 | |
| 215 | District manager | 66 | |
| 510 | Landscape architect | 65 | |
| 106 | Farm machinery parts manager | 62 | |
| 325 | Livestock buyer | 61 | |
| 218 | Assistant manager | 60 | |
| 502 | Florist or flower grower | 58 | |
| 302 | Dairy plant manager | 53 | |

TABLE A-8--Continued

| These Job Titles | | | Need these Groups of Competencies |
|---|---|---|---|
| Code No. | Job Title | Comp. Index | |
| 401 | Cannery or process. plant fieldman | 53 | |
| 516 | Sales mgr; ornamental horticulture | 52 | |
| 408 | Grain elevator manager | 52 | |
| 207 | Feed salesman | 50 | |
| 419 | Sales mgr; crops, forestry, and soil cons. | 49 | |
| 107 | Farm machinery salesman | 47 | |
| 112 | Off. worker; farm machinery sales and serv. | 46 | |
| 423 | Foreman | 44 | |
| 507 | Golf course superintendent | 44 | |
| 220 | Salesman; farm supplies and equip. | 42 | |
| 421 | Warehouse mgr; crops, forestry & soil cons. | 41 | |
| 508 | Golf course employee | 38 | |
| 210 | Farm equipment and supplies salesman | 38 | |
| 511 | Landscape gardener | 35 | |
| 402 | Field crop, fruit & veg. insp. empl. fieldman | 33 | |
| 104 | Farm machinery service center foreman | 32 | |
| 813 | Agricultural engineer | 32 | |
| 103 | Farm machinery mechanics | 32 | |
| 212 | Truck driver for a fuel distributor | 26 | |
| 217 | Chemical fieldman | 26 | |
| 222 | Off. mgr; farm supplies and equip. | 62 | 3. Management and Economics of Business<br>a. Capital management, financing<br>b. Accounting, taxes<br>c. Trade relationships, promotion, advertising<br>d. Government regulations (ICC, PUC, FICA) |
| 413 | Manager; crops, forestry, and soil cons. | 62 | |
| 110 | Mgr; farm machinery sales & serv. | 59 | |
| 214 | Manager; farm supplies and equip. | 55 | |
| 324 | Livestock auction manager | 50 | |
| 365 | Veterinarian | 50 | |
| 218 | Asst. mgr; farm supplies and equipment | 44 | |
| 419 | Sales manager | 43 | |
| 302 | Dairy plant manager | 41 | |
| 112 | Off. worker; farm machinery sales and service | 33 | |
| 507 | Golf course superintendent | 32 | |
| 401 | Cannery or process. plant fieldman | 31 | |
| 502 | Florist or flower grower | 30 | |
| 325 | Livestock buyer | 29 | |
| 106 | Farm machinery parts manager | 28 | |
| 510 | Landscape architect | 34 | C. Trade and Industrial Competencies<br>1. Construction Trades<br>a. Building maintenance<br>b. Masonry<br>c. Carpentry and cabinetmaking<br>d. Sheet metal, tinsmith, coppersmith<br>e. Painting and finishing<br>f. Plumbing<br>g. Heating, ventilation, refrigeration, and air conditioning |
| 423 | Foreman | 29 | |
| 114 | Equipment manager | 28 | |
| 216 | Plant manager; farm supp. and equipment | 26 | |

TABLE A-8--Continued

| These Job Titles | | | Need these Groups of Competencies |
|---|---|---|---|
| Code. No. | Job Title | Comp. Index | |
| 103 | Farm machinery mechanics | 59 | 2. Metal Trades<br>a. Engines, repair and maintenance<br>b. Machinist<br>c. Welding |
| 104 | Farm machinery serv. center foreman | 43 | |
| 110 | Manager; farm machinery sales and service | 42 | |
| 100 | Blacksmith, welder, & general repairman | 34 | |
| 106 | Farm machinery parts manager | 27 | |
| 107 | Farm machinery salesman | 25 | |
| 510 | Landscape architect | 43 | 3. Technicians<br>a. Drafting (design, building, elevations)<br>b. Hydraulics and pneumatics<br>c. Industrial chemistry<br>d. Quality control |
| 813 | Agricultural engineer | 28 | |
| 110 | Manager; farm machinery sales and service | 27 | |
| 103 | Farm machinery mechanics | 25 | |
| 510 | Landscape architect | 75 | 4. Related Subjects<br>a. Blueprint reading<br>b. Technical and service manuals and handbooks, etc. |
| 813 | Agricultural engineer | 50 | |
| 110 | Manager; farm machinery sales and service | 44 | |
| 103 | Farm machinery mechanics | 40 | |
| 511 | Landscape gardener | 37 | |
| 106 | Farm machinery parts manager | 31 | |
| 107 | Farm machinery salesman | 29 | |
| 413 | Manager; crops, forestry, and soil cons. | 28 | |

## TABLE A-9

## IMPORTANCE OF COMPETENCIES IN RELATION TO A GIVEN COMPETENCY

When the Given Competency is 100 the Other Competencies are of this Relative Importance (Read vertical column)

| | Identification number of Competency: | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Ident. No. | Competencies | | | | | |
| 1. | Plant propagation, seed production | 100 | 66 | 61 | 67 | 70 |
| 2. | Plant growth, fertilization | 83 | 100 | 84 | 84 | 79 |
| 3. | Control of insects, diseases, weeds | 78 | 88 | 100 | 80 | 80 |
| 4. | Soil and water management | 73 | 74 | 67 | 100 | 80 |
| 5. | Performing production practices | 73 | 66 | 64 | 76 | 100 |
| 6. | Animal breeding, selection | 28 | 22 | 20 | 24 | 26 |
| 7. | Animal growth, feeding | 32 | 27 | 26 | 30 | 31 |
| 8. | Health and sanitation | 32 | 27 | 27 | 31 | 32 |
| 9. | Housing and equipment | 30 | 26 | 24 | 28 | 30 |
| 10. | Performing production practices | 28 | 23 | 21 | 27 | 29 |
| 11. | Budgeting, records and analysis | 43 | 35 | 35 | 36 | 42 |
| 12. | Farm financing (credit, taxes, etc.) | 37 | 28 | 29 | 32 | 36 |
| 13. | Labor management | 44 | 36 | 36 | 37 | 42 |
| 14. | Marketing practices | 44 | 34 | 36 | 39 | 43 |
| 15. | Agricultural policy | 40 | 33 | 33 | 37 | 42 |
| 16. | Farm power and machinery | 47 | 41 | 39 | 44 | 45 |
| 17. | Farm buildings and conveniences | 42 | 33 | 32 | 38 | 39 |
| 18. | Rural electrification and processing | 29 | 23 | 22 | 27 | 27 |
| 19. | Soil structures (ditches, ponds, etc.) | 46 | 39 | 34 | 49 | 44 |
| 20. | Farm construction and maintenance | 40 | 32 | 30 | 37 | 37 |
| 21. | Communications | 44 | 48 | 45 | 45 | 46 |
| 22. | Receiving, marking, shipping | 35 | 34 | 34 | 33 | 36 |
| 23. | Window and store display | 24 | 24 | 23 | 24 | 24 |
| 24. | Salesmanship and customer relations | 42 | 51 | 50 | 47 | 47 |
| 25. | Business mathematics | 43 | 43 | 44 | 44 | 45 |
| 26. | Bookkeeping, office machines | 35 | 36 | 36 | 36 | 38 |
| 27. | Employee relations with supervisor | 47 | 54 | 52 | 51 | 50 |
| 28. | Employee relations with fellow workers | 48 | 55 | 52 | 52 | 50 |
| 29. | Buying and merchandising | 39 | 40 | 40 | 40 | 41 |
| 30. | Inventory, stock control, warehousing | 40 | 38 | 40 | 37 | 42 |
| 31. | Internal business organizations | 37 | 38 | 38 | 38 | 40 |
| 32. | Capital management, financing | 35 | 32 | 32 | 33 | 36 |
| 33. | Accounting, taxes | 31 | 27 | 26 | 28 | 30 |
| 34. | Trade relationships, promotion | 38 | 35 | 34 | 38 | 40 |
| 35. | Government regulations | 35 | 34 | 33 | 33 | 35 |
| 36. | Building maintenance | 30 | 21 | 20 | 26 | 26 |
| 37. | Masonry | 15 | 11 | 11 | 15 | 14 |
| 38. | Carpentry and cabinetmaking | 19 | 14 | 14 | 18 | 18 |
| 39. | Sheet metal, tinsmith, coppersmith | 14 | 11 | 11 | 13 | 14 |
| 40. | Painting and finishing | 22 | 16 | 16 | 19 | 21 |
| 41. | Plumbing | 21 | 16 | 15 | 21 | 21 |
| 42. | Heating, ventilation, refrigeration | 15 | 13 | 14 | 15 | 16 |
| 43. | Engines, repair and maintenance | 29 | 24 | 24 | 30 | 33 |
| 44. | Machinist | 19 | 14 | 13 | 19 | 19 |
| 45. | Welding | 19 | 16 | 17 | 20 | 22 |
| 46. | Drafting (design, building, elevations) | 19 | 14 | 13 | 19 | 19 |
| 47. | Hydraulics and pneumatics | 17 | 12 | 12 | 17 | 16 |
| 48. | Industrial chemistry | 19 | 15 | 15 | 17 | 19 |
| 49. | Quality control | 24 | 20 | 22 | 22 | 25 |
| 50. | Electrical wiring | 16 | 12 | 12 | 15 | 16 |
| 51. | Electrical power and distribution | 14 | 11 | 11 | 14 | 16 |
| 52. | Electronics | 9 | 7 | 7 | 9 | 10 |
| 53. | Applicance repair | 15 | 12 | 12 | 15 | 16 |
| 54. | Blueprint reading | 21 | 18 | 17 | 23 | 22 |
| 55. | Technical and ser. manuals, handbook | 32 | 27 | 29 | 33 | 25 |

### TABLE A-9--Continued

| | Identification number of Competency: | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|
| Ident. No. | Competencies | | | | | |
| 1. | Plant propagation, seed production | 49 | 44 | 38 | 45 | 46 |
| 2. | Plant growth, fertilization | 47 | 45 | 41 | 48 | 47 |
| 3. | Control of insects, diseases, weeds | 46 | 47 | 42 | 46 | 44 |
| 4. | Soil and water management | 45 | 44 | 40 | 45 | 49 |
| 5. | Performing production practices | 46 | 44 | 39 | 47 | 50 |
| 6. | Animal breeding selection | 100 | 68 | 58 | 69 | 75 |
| 7. | Animal growth, feeding | 87 | 100 | 75 | 79 | 79 |
| 8. | Health and sanitation | 85 | 85 | 100 | 83 | 84 |
| 9. | Housing and equipment | 80 | 73 | 67 | 100 | 83 |
| 10. | Performing production practices | 79 | 65 | 60 | 74 | 100 |
| 11. | Budgeting, records and analysis | 41 | 42 | 39 | 40 | 42 |
| 12. | Farm financing (credit, taxes, etc.) | 38 | 35 | 30 | 36 | 38 |
| 13. | Labor management | 41 | 39 | 37 | 39 | 43 |
| 14. | Marketing practices | 50 | 45 | 44 | 46 | 49 |
| 15. | Agricultural policy | 42 | 40 | 37 | 41 | 45 |
| 16. | Farm power and machinery | 48 | 42 | 37 | 45 | 44 |
| 17. | Farm buildings and conveniences | 54 | 45 | 40 | 51 | 51 |
| 18. | Rural electrification and processing | 38 | 31 | 28 | 36 | 37 |
| 19. | Soil structures (ditches, ponds, etc.) | 43 | 37 | 32 | 39 | 42 |
| 20. | Farm construction and maintenance | 46 | 40 | 35 | 44 | 45 |
| 21. | Communications | 44 | 50 | 47 | 47 | 49 |
| 22. | Receiving, marking, shipping | 39 | 39 | 40 | 41 | 44 |
| 23. | Window and store display | 33 | 30 | 27 | 33 | 32 |
| 24. | Salesmanship and customer relations | 42 | 48 | 47 | 48 | 46 |
| 25. | Business mathematics | 46 | 49 | 49 | 49 | 49 |
| 26. | Bookkeeping, office machines | 38 | 39 | 35 | 34 | 35 |
| 27. | Employee relations with supervisor | 44 | 49 | 52 | 47 | 47 |
| 28. | Employee relations with fellow workers | 48 | 50 | 54 | 50 | 49 |
| 29. | Buying and merchandising | 40 | 44 | 42 | 40 | 39 |
| 30. | Inventory, stock control, warehousing | 42 | 45 | 45 | 44 | 44 |
| 31. | Internal business organizations | 40 | 40 | 36 | 37 | 39 |
| 32. | Capital management, financing | 29 | 34 | 29 | 29 | 31 |
| 33. | Accounting, taxes | 31 | 29 | 27 | 26 | 30 |
| 34. | Trade relationships, promotion | 38 | 39 | 35 | 37 | 38 |
| 35. | Government regulations | 38 | 36 | 36 | 37 | 37 |
| 36. | Building maintenance | 30 | 25 | 23 | 26 | 25 |
| 37. | Masonry | 13 | 10 | 9 | 11 | 12 |
| 38. | Carpentry and cabinetmaking | 19 | 15 | 14 | 16 | 17 |
| 39. | Sheet metal, tinsmith, coppersmith | 15 | 12 | 12 | 14 | 14 |
| 40. | Painting and finishing | 20 | 17 | 16 | 20 | 18 |
| 41. | Plumbing | 20 | 17 | 16 | 18 | 18 |
| 42. | Heating, ventilation refrigeration | 16 | 13 | 14 | 20 | 18 |
| 43. | Engines, repair and maintenance | 28 | 25 | 21 | 27 | 26 |
| 44. | Machinist | 19 | 15 | 13 | 16 | 17 |
| 45. | Welding | 19 | 16 | 13 | 19 | 20 |
| 46. | Drafting (design, building, elevations) | 20 | 16 | 15 | 20 | 19 |
| 47. | Hydraulics and pneumatics | 15 | 13 | 13 | 17 | 18 |
| 48. | Industrial chemistry | 18 | 14 | 13 | 16 | 18 |
| 49. | Quality control | 25 | 24 | 23 | 24 | 29 |
| 50. | Electrical wiring | 17 | 15 | 14 | 17 | 16 |
| 51. | Electrical power and distribution | 14 | 12 | 12 | 15 | 15 |
| 52. | Electronics | 11 | 9 | 8 | 9 | 10 |
| 53. | Appliance repair | 15 | 13 | 13 | 15 | 15 |
| 54. | Blueprint reading | 21 | 18 | 15 | 20 | 21 |
| 55. | Technical and ser. manuals, handbooks | 31 | 30 | 27 | 32 | 32 |

TABLE A-9--Continued

| Ident. No. | Competencies / Identification number of Competency: | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|
| 1. | Plant propagation, seed production | 32 | 36 | 37 | 33 | 35 |
| 2. | Plant growth, fertilization | 33 | 34 | 37 | 32 | 36 |
| 3. | Control of insects, diseases, weeds | 35 | 36 | 39 | 36 | 37 |
| 4. | Soil and water management | 30 | 34 | 34 | 32 | 35 |
| 5. | Performing production practices | 33 | 36 | 36 | 34 | 38 |
| 6. | Animal breeding, selection | 18 | 21 | 20 | 22 | 21 |
| 7. | Animal growth, feeding | 23 | 25 | 24 | 25 | 26 |
| 8. | Health and sanitation | 25 | 25 | 26 | 28 | 27 |
| 9. | Housing and equipment | 20 | 24 | 22 | 24 | 24 |
| 10. | Performing production practices | 19 | 22 | 21 | 22 | 24 |
| 11. | Budgeting, records and analysis | 100 | 84 | 72 | 69 | 70 |
| 12. | Farm financing (credit, taxes, etc.) | 66 | 100 | 59 | 60 | 65 |
| 13. | Labor management | 66 | 69 | 100 | 65 | 65 |
| 14. | Marketing practices | 69 | 76 | 71 | 100 | 78 |
| 15. | Agricultural policy | 60 | 71 | 62 | 67 | 100 |
| 16. | Farm power and machinery | 34 | 39 | 39 | 30 | 36 |
| 17. | Farm buildings and conveniences | 30 | 34 | 34 | 29 | 33 |
| 18. | Rural electrification and processing | 22 | 26 | 23 | 22 | 26 |
| 19. | Soil structures (ditches, ponds, etc.) | 28 | 32 | 31 | 26 | 33 |
| 20. | Farm construction and maintenance | 27 | 32 | 31 | 27 | 31 |
| 21. | Communications | 55 | 49 | 54 | 52 | 54 |
| 22. | Receiving, marking, shipping | 44 | 42 | 50 | 51 | 46 |
| 23. | Window and store display | 24 | 27 | 26 | 28 | 26 |
| 24. | Salesmanship and customer relations | 56 | 51 | 55 | 53 | 53 |
| 25. | Business mathematics | 56 | 51 | 55 | 57 | 56 |
| 26. | Bookkeeping, office machines | 47 | 46 | 46 | 44 | 47 |
| 27. | Employee relations with supervisor | 59 | 51 | 58 | 56 | 56 |
| 28. | Employee relations with fellow workers | 56 | 50 | 59 | 57 | 55 |
| 29. | Buying and merchandising | 54 | 49 | 52 | 56 | 49 |
| 30. | Inventory, stock control, warehousing | 56 | 49 | 57 | 56 | 48 |
| 31. | Internal business organizations | 48 | 50 | 49 | 48 | 52 |
| 32. | Capital management, financing | 50 | 55 | 48 | 48 | 47 |
| 33. | Accounting, taxes | 44 | 51 | 43 | 32 | 43 |
| 34. | Trade relationships, promotion | 46 | 47 | 47 | 49 | 49 |
| 35. | Government regulations | 48 | 49 | 46 | 51 | 58 |
| 36. | Building maintenance | 22 | 23 | 25 | 22 | 25 |
| 37. | Masonry | 10 | 11 | 13 | 10 | 11 |
| 38. | Carpentry and cabinetmaking | 12 | 13 | 15 | 13 | 13 |
| 39. | Sheet metal, tinsmith, coppersmith | 10 | 11 | 13 | 10 | 11 |
| 40. | Painting and finishing | 14 | 15 | 18 | 14 | 16 |
| 41. | Plumbing | 14 | 16 | 17 | 15 | 16 |
| 42. | Heating, ventilation, refrigeration | 13 | 14 | 17 | 16 | 16 |
| 43. | Engines, repair and maintenance | 22 | 25 | 29 | 23 | 26 |
| 44. | Machinist | 12 | 15 | 17 | 13 | 17 |
| 45. | Welding | 14 | 16 | 20 | 14 | 19 |
| 46. | Drafting (design, building, elevations) | 14 | 15 | 15 | 12 | 16 |
| 47. | Hydraulics and pneumatics | 13 | 15 | 16 | 13 | 16 |
| 48. | Industrial chemistry | 12 | 12 | 14 | 13 | 15 |
| 49. | Quality control | 26 | 25 | 26 | 24 | 26 |
| 50. | Electrical wiring | 13 | 14 | 16 | 14 | 14 |
| 51. | Electrical power and distribution | 11 | 12 | 14 | 10 | 12 |
| 52. | Electronics | 6 | 7 | 8 | 6 | 7 |
| 53. | Appliance repair | 9 | 11 | 12 | 10 | 11 |
| 54. | Blueprint reading | 18 | 20 | 21 | 16 | 20 |
| 55. | Technical and ser. manuals, handbooks | 33 | 32 | 32 | 30 | 33 |

### TABLE A-9--Continued

| Ident. No. | Identification number of Competency: <br> Competencies | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|
| 1. | Plant propagation, seed production | 35 | 50 | 50 | 55 | 53 |
| 2. | Plant growth, fertilization | 38 | 49 | 50 | 58 | 52 |
| 3. | Control of insects, diseases, weeds | 38 | 50 | 50 | 54 | 51 |
| 4. | Soil and water management | 36 | 49 | 51 | 64 | 53 |
| 5. | Performing production practices | 35 | 49 | 49 | 55 | 50 |
| 6. | Animal breeding, selection | 21 | 37 | 37 | 30 | 35 |
| 7. | Animal growth, feeding | 24 | 40 | 38 | 32 | 39 |
| 8. | Health and sanitation | 23 | 40 | 40 | 32 | 38 |
| 9. | Housing and equipment | 23 | 41 | 41 | 32 | 39 |
| 10. | Performing production practices | 20 | 37 | 38 | 31 | 36 |
| 11. | Budgeting, records and analysis | 34 | 47 | 49 | 44 | 47 |
| 12. | Farm financing (credit, taxes, etc.) | 31 | 42 | 45 | 40 | 43 |
| 13. | Labor management | 35 | 49 | 48 | 45 | 49 |
| 14. | Marketing practices | 30 | 46 | 49 | 41 | 47 |
| 15. | Agricultural policy | 31 | 45 | 50 | 45 | 46 |
| 16. | Farm power and machinery | 100 | 81 | 80 | 75 | 75 |
| 17. | Farm buildings and conveniences | 51 | 100 | 80 | 60 | 77 |
| 18. | Rural electrification and processing | 35 | 56 | 100 | 52 | 59 |
| 19. | Soil structures (ditches, ponds, etc.) | 47 | 60 | 74 | 100 | 69 |
| 20. | Farm construction and maintenance | 43 | 70 | 77 | 63 | 100 |
| 21. | Communications | 47 | 48 | 51 | 47 | 49 |
| 22. | Receiving, marking, shipping | 31 | 37 | 41 | 31 | 35 |
| 23. | Window and store display | 25 | 32 | 35 | 28 | 31 |
| 24. | Salesmanship and customer relations | 50 | 45 | 40 | 44 | 45 |
| 25. | Business mathematics | 39 | 47 | 47 | 44 | 46 |
| 26. | Bookkeeping, office machines | 28 | 37 | 42 | 33 | 39 |
| 27. | Employee relations with supervisor | 54 | 44 | 47 | 49 | 48 |
| 28. | Employee relations with fellow workers | 56 | 46 | 49 | 50 | 48 |
| 29. | Buying and merchandising | 36 | 43 | 44 | 38 | 43 |
| 30. | Inventory, stock control, warehousing | 41 | 45 | 44 | 41 | 46 |
| 31. | Internal business organizations | 38 | 46 | 47 | 44 | 44 |
| 32. | Capital management, financing | 26 | 35 | 40 | 36 | 37 |
| 33. | Accounting, taxes | 23 | 33 | 39 | 30 | 35 |
| 34. | Trade relationships, promotion | 32 | 43 | 46 | 42 | 44 |
| 35. | Government regulations | 30 | 40 | 46 | 43 | 42 |
| 36. | Building maintenance | 30 | 39 | 46 | 38 | 44 |
| 37. | Masonry | 13 | 17 | 25 | 21 | 20 |
| 38. | Carpentry and cabinetmaking | 17 | 22 | 31 | 24 | 25 |
| 39. | Sheet metal, tinsmith, coppersmith | 17 | 19 | 29 | 19 | 23 |
| 40. | Painting and finishing | 23 | 29 | 36 | 27 | 31 |
| 41. | Plumbing | 22 | 28 | 36 | 28 | 30 |
| 42. | Heating, ventilation, refrigeration | 16 | 24 | 36 | 21 | 26 |
| 43. | Engines, repair and maintenance | 47 | 44 | 43 | 41 | 40 |
| 44. | Machinist | 28 | 28 | 31 | 23 | 26 |
| 45. | Welding | 33 | 30 | 32 | 25 | 31 |
| 46. | Drafting (design, building, elevations) | 19 | 24 | 28 | 26 | 22 |
| 47. | Hydraulics and pneumatics | 25 | 25 | 31 | 24 | 26 |
| 48. | Industrial chemistry | 14 | 18 | 23 | 21 | 19 |
| 49. | Quality control | 26 | 30 | 37 | 30 | 29 |
| 50. | Electrical wiring | 21 | 28 | 35 | 24 | 27 |
| 51. | Electrical power and distribution | 17 | 22 | 30 | 20 | 23 |
| 52. | Electronics | 10 | 13 | 20 | 13 | 14 |
| 53. | Applicance repair | 15 | 19 | 24 | 21 | 21 |
| 54. | Blueprint reading | 27 | 28 | 36 | 32 | 29 |
| 55. | Technical and ser. manuals, handbooks | 46 | 42 | 45 | 44 | 44 |

TABLE A-9--Continued

| Ident. No. | Competencies / Identification number of Competency: | 21 | 22 | 23 | 24 | 25 | 26 |
|---|---|---|---|---|---|---|---|
| 1. | Plant propagation, seed production | 22 | 24 | 30 | 19 | 23 | 27 |
| 2. | Plant growth, fertilization | 30 | 29 | 37 | 28 | 28 | 34 |
| 3. | Control of insects, diseases, weeds | 29 | 30 | 38 | 29 | 31 | 36 |
| 4. | Soil and water management | 24 | 25 | 33 | 22 | 26 | 30 |
| 5. | Performing production practices | 24 | 26 | 32 | 21 | 25 | 30 |
| 6. | Animal breeding, selection | 13 | 15 | 24 | 11 | 14 | 17 |
| 7. | Animal growth, feeding | 18 | 20 | 28 | 16 | 19 | 22 |
| 8. | Health and sanitation | 20 | 23 | 29 | 17 | 22 | 22 |
| 9. | Housing and equipment | 16 | 19 | 28 | 14 | 18 | 18 |
| 10. | Performing production practices | 15 | 18 | 24 | 12 | 16 | 16 |
| 11. | Budgeting, records and analysis | 36 | 39 | 40 | 32 | 40 | 47 |
| 12. | Farm financing (credit, taxes, etc.) | 25 | 30 | 35 | 23 | 28 | 36 |
| 13. | Labor management | 32 | 41 | 39 | 29 | 36 | 42 |
| 14. | Marketing practices | 34 | 46 | 46 | 31 | 40 | 44 |
| 15. | Agricultural policy | 30 | 36 | 38 | 27 | 34 | 41 |
| 16. | Farm power and machinery | 31 | 28 | 41 | 29 | 28 | 28 |
| 17. | Farm buildings and conveniences | 20 | 21 | 34 | 17 | 21 | 24 |
| 18. | Rural electrification and processing | 15 | 17 | 26 | 10 | 15 | 19 |
| 19. | Soil structures (ditches, ponds, etc.) | 19 | 18 | 29 | 16 | 20 | 21 |
| 20. | Farm construction and maintenance | 19 | 18 | 30 | 15 | 19 | 23 |
| 21. | Communications | 100 | 71 | 75 | 63 | 62 | 62 |
| 22. | Receiving, marking, shipping | 51 | 100 | 77 | 46 | 50 | 51 |
| 23. | Window and store display | 29 | 42 | 100 | 26 | 30 | 35 |
| 24. | Salesmanship and customer relations | 71 | 72 | 75 | 100 | 71 | 66 |
| 25. | Business mathematics | 57 | 64 | 71 | 58 | 100 | 71 |
| 26. | Bookkeeping, office machines | 40 | 46 | 58 | 38 | 55 | 100 |
| 27. | Employee relations with supervisor | 73 | 69 | 73 | 71 | 66 | 62 |
| 28. | Employee relations with fellow workers | 74 | 71 | 74 | 74 | 67 | 62 |
| 29. | Buying and merchandising | 48 | 62 | 67 | 47 | 57 | 59 |
| 30. | Inventory, stock control, warehousing | 51 | 71 | 71 | 49 | 59 | 60 |
| 31. | Internal business organizations | 45 | 47 | 56 | 41 | 49 | 56 |
| 32. | Capital management, financing | 34 | 38 | 44 | 30 | 40 | 49 |
| 33. | Accounting, taxes | 29 | 35 | 41 | 26 | 40 | 53 |
| 34. | Trade relationships, promotion | 40 | 47 | 64 | 34 | 45 | 52 |
| 35. | Government regulations | 38 | 45 | 49 | 35 | 44 | 51 |
| 36. | Building maintenance | 18 | 20 | 25 | 14 | 18 | 22 |
| 37. | Masonry | 9 | 11 | 14 | 7 | 9 | 12 |
| 38. | Carpentry and cabinetmaking | 10 | 13 | 17 | 8 | 11 | 14 |
| 39. | Sheet metal, tinsmith, coppersmith | 10 | 12 | 14 | 9 | 12 | 13 |
| 40. | Painting and finishing | 13 | 16 | 18 | 12 | 14 | 17 |
| 41. | Plumbing | 13 | 15 | 17 | 11 | 15 | 15 |
| 42. | Heating, ventilation, refrigeration | 11 | 16 | 19 | 9 | 12 | 16 |
| 43. | Engines, repair and maintenance | 23 | 24 | 28 | 21 | 20 | 23 |
| 44. | Machinist | 13 | 14 | 16 | 11 | 12 | 13 |
| 45. | Welding | 16 | 14 | 17 | 14 | 14 | 16 |
| 46. | Drafting (design, building, elevations) | 10 | 10 | 17 | 9 | 12 | 15 |
| 47. | Hydraulics and pneumatics | 12 | 13 | 19 | 11 | 13 | 14 |
| 48. | Industrial chemistry | 10 | 10 | 14 | 7 | 9 | 12 |
| 49. | Quality control | 22 | 22 | 25 | 18 | 20 | 22 |
| 50. | Electrical wiring | 12 | 14 | 17 | 10 | 12 | 13 |
| 51. | Electrical power and distribution | 9 | 11 | 13 | 8 | 9 | 11 |
| 52. | Electronics | 6 | 7 | 10 | 4 | 6 | 7 |
| 53. | Appliance repair | 8 | 11 | 13 | 6 | 8 | 11 |
| 54. | Blueprint reading | 14 | 16 | 20 | 13 | 15 | 19 |
| 55. | Technical and ser. manuals, handbooks | 32 | 30 | 33 | 28 | 27 | 29 |

TABLE A-9--Continued

| | Identification number of Competency: | 27 | 28 | 29 | 30 | 31 |
|---|---|---|---|---|---|---|
| Ident. No. | Competencies | | | | | |
| 1. | Plant propagation, seed production | 19 | 18 | 26 | 24 | 26 |
| 2. | Plant growth, fertilization | 26 | 26 | 32 | 28 | 34 |
| 3. | Control of insects, diseases, weeds | 27 | 26 | 34 | 30 | 35 |
| 4. | Soil and water management | 22 | 21 | 28 | 24 | 29 |
| 5. | Performing production practices | 21 | 20 | 28 | 26 | 29 |
| 6. | Animal breeding, selection | 10 | 11 | 15 | 14 | 16 |
| 7. | Animal growth, feeding | 14 | 14 | 21 | 20 | 21 |
| 8. | Health and sanitation | 17 | 17 | 23 | 22 | 21 |
| 9. | Housing and equipment | 13 | 13 | 18 | 18 | 17 |
| 10. | Performing production practices | 11 | 11 | 15 | 16 | 17 |
| 11. | Budgeting, records and analysis | 31 | 28 | 46 | 44 | 44 |
| 12. | Farm financing (credit, taxes, etc.) | 21 | 20 | 33 | 30 | 37 |
| 13. | Labor management | 28 | 27 | 41 | 40 | 42 |
| 14. | Marketing practices | 29 | 28 | 48 | 44 | 44 |
| 15. | Agricultural policy | 25 | 24 | 36 | 33 | 42 |
| 16. | Farm power and machinery | 28 | 28 | 31 | 32 | 36 |
| 17. | Farm buildings and conveniences | 15 | 15 | 24 | 22 | 27 |
| 18. | Rural electrification and processing | 11 | 11 | 17 | 15 | 19 |
| 19. | Soil structures (ditches, ponds, etc.) | 16 | 16 | 20 | 20 | 25 |
| 20. | Farm construction and maintenance | 14 | 14 | 21 | 21 | 24 |
| 21. | Communications | 58 | 57 | 63 | 61 | 63 |
| 22. | Receiving, marking, shipping | 40 | 39 | 59 | 61 | 49 |
| 23. | Window and store display | 23 | 22 | 35 | 33 | 31 |
| 24. | Business mathematics | 64 | 64 | 70 | 66 | 65 |
| 25. | Business mathematics | 48 | 47 | 70 | 65 | 64 |
| 26. | Bookkeeping, office machines | 32 | 31 | 51 | 47 | 52 |
| 27. | Employee relations with supervisor | 100 | 90 | 75 | 75 | 73 |
| 28. | Employee relations with fellow workers | 94 | 100 | 75 | 74 | 76 |
| 29. | Buying and merchandising | 45 | 44 | 100 | 72 | 68 |
| 30. | Inventory, stock control, warehousing | 50 | 48 | 79 | 100 | 74 |
| 31. | Internal business organizations | 41 | 41 | 63 | 62 | 100 |
| 32. | Capital management, financing | 26 | 25 | 47 | 41 | 48 |
| 33. | Accounting, taxes | 23 | 23 | 38 | 36 | 45 |
| 34. | Trade relationships, promotion | 30 | 30 | 50 | 48 | 51 |
| 35. | Government regulations | 35 | 33 | 49 | 46 | 52 |
| 36. | Building maintenance | 15 | 15 | 19 | 21 | 25 |
| 37. | Masonry | 6 | 6 | 10 | 9 | 11 |
| 38. | Carpentry and cabinetmaking | 8 | 7 | 11 | 11 | 13 |
| 39. | Sheet metal, tinsmith, coppersmith | 9 | 8 | 12 | 10 | 13 |
| 40. | Painting and finishing | 11 | 10 | 14 | 14 | 17 |
| 41. | Plumbing | 11 | 10 | 14 | 13 | 17 |
| 42. | Heating, ventilation, refrigeration | 10 | 9 | 12 | 12 | 16 |
| 43. | Engines, repair and maintenance | 21 | 20 | 22 | 22 | 26 |
| 44. | Machinist | 11 | 11 | 11 | 11 | 14 |
| 45. | Welding | 15 | 14 | 15 | 15 | 15 |
| 46. | Drafting (design, building, elevations) | 8 | 8 | 14 | 12 | 15 |
| 47. | Hydraulics and pneumatics | 12 | 11 | 14 | 12 | 14 |
| 48. | Industrial chemistry | 8 | 8 | 11 | 11 | 13 |
| 49. | Quality control | 20 | 19 | 22 | 25 | 28 |
| 50. | Electrical wiring | 10 | 9 | 13 | 13 | 15 |
| 51. | Electrical power and distribution | 7 | 7 | 10 | 11 | 12 |
| 52. | Electronics | 4 | 4 | 6 | 5 | 6 |
| 53. | Appliance repair | 6 | 6 | 9 | 9 | 10 |
| 54. | Blueprint reading | 13 | 12 | 17 | 15 | 19 |
| 55. | Technical and ser. manuals, handbooks | 30 | 29 | 32 | 33 | 34 |

TABLE A-9--Continued

| Ident. No. | Identification number of Competency:<br>Competencies: | 32 | 33 | 34 | 35 |
|---|---|---|---|---|---|
| 1. | Plant propagation, seed production | 32 | 30 | 31 | 28 |
| 2. | Plant growth, fertilization | 36 | 32 | 36 | 33 |
| 3. | Control of insects, diseases, weeds | 38 | 33 | 36 | 34 |
| 4. | Soil and water management | 33 | 30 | 34 | 28 |
| 5. | Performing production practices | 34 | 30 | 34 | 28 |
| 6. | Animal breeding, selection | 15 | 17 | 18 | 17 |
| 7. | Animal growth, feeding | 23 | 21 | 24 | 21 |
| 8. | Health and sanitation | 22 | 22 | 24 | 24 |
| 9. | Housing and equipment | 18 | 17 | 20 | 20 |
| 10. | Performing production practices | 17 | 17 | 19 | 18 |
| 11. | Budgeting, records and analysis | 60 | 56 | 49 | 50 |
| 12. | Farm financing (credit, taxes, etc.) | 52 | 51 | 39 | 40 |
| 13. | Labor management | 53 | 50 | 46 | 43 |
| 14. | Marketing practices | 58 | 54 | 53 | 53 |
| 15. | Agricultural Policy | 49 | 48 | 45 | 52 |
| 16. | Farm power and machinery | 32 | 30 | 35 | 31 |
| 17. | Farm buildings and conveniences | 27 | 27 | 29 | 26 |
| 18. | Rural electrification and processing | 21 | 22 | 22 | 21 |
| 19. | Soil structures (ditches, ponds, etc.) | 28 | 24 | 29 | 28 |
| 20. | Farm construction and maintenance | 26 | 26 | 27 | 26 |
| 21. | Communications | 62 | 57 | 66 | 61 |
| 22. | Receiving, marking, shipping | 50 | 49 | 56 | 51 |
| 23. | Window and store display | 32 | 31 | 41 | 30 |
| 24. | Salesmanship and customer relations | 63 | 58 | 64 | 63 |
| 25. | Business mathematics | 70 | 72 | 68 | 65 |
| 26. | Bookkeeping, office machines | 59 | 67 | 56 | 53 |
| 27. | Employee relations with supervisor | 59 | 57 | 62 | 69 |
| 28. | Employee relations with fellow workers | 61 | 59 | 64 | 69 |
| 29. | Buying and merchandising | 66 | 57 | 63 | 60 |
| 30. | Inventory, stock control, warehousing | 64 | 59 | 67 | 61 |
| 31. | Internal business organizations | 63 | 62 | 59 | 59 |
| 32. | Capital management, financing | 100 | 78 | 61 | 60 |
| 33. | Accounting, taxes | 74 | 100 | 56 | 56 |
| 34. | Trade relationships, promotion | 69 | 67 | 100 | 60 |
| 35. | Government regulations | 70 | 68 | 62 | 100 |
| 36. | Building maintenance | 25 | 26 | 25 | 24 |
| 37. | Masonry | 13 | 13 | 11 | 11 |
| 38. | Carpentry and cabinetmaking | 14 | 15 | 13 | 13 |
| 39. | Sheet metal, tinsmith, coppersmith | 13 | 15 | 12 | 14 |
| 40. | Painting and finishing | 16 | 18 | 16 | 15 |
| 41. | Plumbing | 18 | 19 | 17 | 16 |
| 42. | Heating, ventilation, refrigeration | 15 | 16 | 16 | 16 |
| 43. | Engines, repair and maintenance | 24 | 25 | 26 | 23 |
| 44. | Machinist | 15 | 16 | 14 | 15 |
| 45. | Welding | 17 | 17 | 16 | 16 |
| 46. | Drafting (design, building, elevations) | 14 | 15 | 16 | 16 |
| 47. | Hydraulics and pneumatics | 15 | 17 | 17 | 15 |
| 48. | Industrial chemistry | 13 | 13 | 15 | 13 |
| 49. | Quality control | 24 | 22 | 24 | 28 |
| 50. | Electrical wiring | 16 | 16 | 16 | 14 |
| 51. | Electrical power and distribution | 12 | 13 | 13 | 12 |
| 52. | Electronics | 10 | 10 | 8 | 8 |
| 53. | Appliance repair | 13 | 15 | 13 | 13 |
| 54. | Blueprint reading | 20 | 21 | 19 | 20 |
| 55. | Technical and ser. manuals, handbooks | 34 | 30 | 37 | 35 |

TABLE A-9--Continued

| Ident. No. | Identification number of Competency: / Competencies | 36 | 37 | 38 | 39 | 40 | 41 | 42 |
|---|---|---|---|---|---|---|---|---|
| 1. | Plant propagation, seed production | 39 | 41 | 44 | 32 | 39 | 38 | 33 |
| 2. | Plant growth, fertilization | 35 | 38 | 40 | 31 | 37 | 37 | 34 |
| 3. | Control of insects, diseases, weeds | 34 | 37 | 40 | 32 | 37 | 36 | 37 |
| 4. | Soil and water management | 36 | 45 | 44 | 34 | 38 | 43 | 34 |
| 5. | Performing production practices | 35 | 40 | 43 | 35 | 40 | 40 | 36 |
| 6. | Animal breeding, selection | 22 | 21 | 25 | 21 | 21 | 21 | 20 |
| 7. | Animal growth, feeding | 24 | 20 | 25 | 21 | 22 | 23 | 21 |
| 8. | Health and sanitation | 26 | 21 | 27 | 24 | 25 | 24 | 25 |
| 9. | Housing and equipment | 22 | 21 | 25 | 22 | 24 | 22 | 28 |
| 10. | Performing production practices | 20 | 20 | 23 | 20 | 20 | 20 | 22 |
| 11. | Budgeting, records and analysis | 37 | 35 | 35 | 30 | 33 | 34 | 36 |
| 12. | Farm financing (credit, taxes, etc.) | 30 | 31 | 29 | 26 | 28 | 30 | 31 |
| 13. | Labor management | 39 | 42 | 42 | 37 | 39 | 38 | 43 |
| 14. | Marketing practices | 38 | 37 | 39 | 30 | 34 | 35 | 46 |
| 15. | Agricultural Policy | 37 | 33 | 33 | 30 | 32 | 34 | 39 |
| 16. | Farm power and machinery | 51 | 47 | 50 | 52 | 54 | 55 | 44 |
| 17. | Farm buildings and conveniences | 43 | 38 | 41 | 37 | 43 | 44 | 43 |
| 18. | Rural electrification and processing | 35 | 40 | 41 | 40 | 38 | 39 | 44 |
| 19. | Soil structures (ditches, ponds, etc.) | 40 | 47 | 45 | 37 | 40 | 42 | 36 |
| 20. | Farm construction and maintenance | 43 | 42 | 42 | 41 | 43 | 42 | 43 |
| 21. | Communications | 47 | 49 | 45 | 46 | 47 | 47 | 48 |
| 22. | Receiving, marking, shipping | 39 | 42 | 44 | 40 | 41 | 40 | 48 |
| 23. | Window and store display | 26 | 31 | 30 | 25 | 26 | 25 | 32 |
| 24. | Salesmanship and customer relations | 41 | 42 | 40 | 50 | 48 | 47 | 43 |
| 25. | Business mathematics | 42 | 47 | 46 | 50 | 47 | 50 | 47 |
| 26. | Bookkeeping, office machines | 37 | 42 | 40 | 41 | 39 | 36 | 44 |
| 27. | Employee relations with supervisor | 50 | 42 | 44 | 50 | 50 | 51 | 52 |
| 28. | Employee relations with fellow workers | 52 | 41 | 42 | 48 | 49 | 49 | 52 |
| 29. | Buying and merchandising | 37 | 43 | 39 | 42 | 38 | 40 | 39 |
| 30. | Inventory, stock control, warehousing | 46 | 41 | 41 | 41 | 42 | 41 | 44 |
| 31. | Internal business organizations | 46 | 44 | 40 | 44 | 43 | 45 | 48 |
| 32. | Capital management, financing | 35 | 38 | 35 | 34 | 31 | 36 | 34 |
| 33. | Accounting, taxes | 35 | 37 | 35 | 36 | 34 | 36 | 35 |
| 34. | Trade relationships, promotion | 40 | 36 | 36 | 34 | 35 | 38 | 40 |
| 35. | Government regulations | 39 | 37 | 36 | 41 | 35 | 37 | 44 |
| 36. | Building maintenance | 100 | 83 | 80 | 71 | 67 | 73 | 73 |
| 37. | Masonry | 39 | 100 | 75 | 59 | 53 | 55 | 50 |
| 38. | Carpentry and cabinetmaking | 46 | 89 | 100 | 71 | 66 | 67 | 55 |
| 39. | Sheet metal, tinsmith, coppersmith | 39 | 68 | 69 | 100 | 67 | 60 | 54 |
| 40. | Painting and finishing | 48 | 79 | 83 | 86 | 100 | 76 | 64 |
| 41. | Plumbing | 52 | 81 | 82 | 76 | 75 | 100 | 64 |
| 42. | Heating, ventilation, refrigeration | 45 | 64 | 59 | 59 | 55 | 56 | 100 |
| 43. | Engines, repair and maintenance | 48 | 62 | 60 | 63 | 65 | 64 | 52 |
| 44. | Machinist | 32 | 45 | 43 | 58 | 47 | 45 | 35 |
| 45. | Welding | 34 | 47 | 50 | 60 | 56 | 52 | 38 |
| 46. | Drafting (design, building, elevations) | 28 | 40 | 37 | 44 | 38 | 38 | 31 |
| 47. | Hydraulics and pneumatics | 23 | 34 | 32 | 50 | 43 | 37 | 31 |
| 48. | Industrial chemistry | 22 | 34 | 29 | 35 | 32 | 30 | 29 |
| 49. | Quality control | 40 | 40 | 35 | 44 | 40 | 39 | 52 |
| 50. | Electrical wiring | 39 | 59 | 59 | 62 | 59 | 56 | 47 |
| 51. | Electrical power and distribution | 27 | 41 | 42 | 46 | 42 | 39 | 38 |
| 52. | Electronics | 18 | 30 | 28 | 31 | 25 | 25 | 27 |
| 53. | Appliance repair | 29 | 42 | 45 | 42 | 41 | 40 | 39 |
| 54. | Blueprint reading | 33 | 49 | 46 | 50 | 44 | 47 | 36 |
| 55. | Technical and ser. manuals, handbooks | 55 | 60 | 57 | 62 | 63 | 62 | 56 |

### TABLE A-9--Continued

| | Identification number of Competency: | 43 | 44 | 45 |
|---|---|---|---|---|
| Ident. No. | Competencies | | | |
| 1. | Plant propagation, seed production | 29 | 33 | 26 |
| 2. | Plant growth, fertilization | 30 | 34 | 29 |
| 3. | Control of insects, diseases, weeds | 32 | 35 | 31 |
| 4. | Soil and water management | 33 | 38 | 31 |
| 5. | Performing production practices | 35 | 37 | 32 |
| 6. | Animal breeding, selection | 16 | 19 | 15 |
| 7. | Animal growth, feeding | 19 | 20 | 17 |
| 8. | Health and sanitation | 18 | 19 | 16 |
| 9. | Housing and equipment | 19 | 19 | 18 |
| 10. | Performing production practices | 16 | 18 | 17 |
| 11. | Budgeting, records and analysis | 30 | 28 | 26 |
| 12. | Farm financing (credit, taxes, etc.) | 26 | 27 | 23 |
| 13. | Labor management | 36 | 36 | 34 |
| 14. | Marketing practices | 31 | 30 | 27 |
| 15. | Agricultural policy | 30 | 35 | 30 |
| 16. | Farm power and machinery | 65 | 65 | 61 |
| 17. | Farm buildings and conveniences | 37 | 41 | 35 |
| 18. | Rural electrification and processing | 26 | 31 | 26 |
| 19. | Soil structures (ditches, ponds, etc.) | 35 | 34 | 29 |
| 20. | Farm construction and maintenance | 31 | 35 | 33 |
| 21. | Communications | 47 | 44 | 46 |
| 22. | Receiving, marking, shipping | 36 | 35 | 29 |
| 23. | Window and store display | 23 | 23 | 19 |
| 24. | Salesmanship and customer relations | 49 | 44 | 46 |
| 25. | Business mathematics | 39 | 39 | 36 |
| 26. | Bookkeeping, office machines | 32 | 30 | 29 |
| 27. | Employee relations with supervisor | 53 | 51 | 55 |
| 28. | Employee relations with fellow workers | 54 | 50 | 53 |
| 29. | Buying and merchandising | 34 | 31 | 32 |
| 30. | Inventory, stock control, warehousing | 38 | 31 | 36 |
| 31. | Internal business organizations | 38 | 34 | 30 |
| 32. | Capital management, financing | 27 | 28 | 26 |
| 33. | Accounting, taxes | 26 | 29 | 24 |
| 34. | Trade relationships, promotion | 33 | 30 | 28 |
| 35. | Government regulations | 30 | 33 | 28 |
| 36. | Building maintenance | 38 | 43 | 37 |
| 37. | Masonry | 23 | 29 | 25 |
| 38. | Carpentry and cabinetmaking | 27 | 33 | 31 |
| 39. | Sheet metal, tinsmith, coppersmith | 28 | 44 | 36 |
| 40. | Painting and finishing | 37 | 46 | 43 |
| 41. | Plumbing | 36 | 43 | 40 |
| 42. | Heating, ventilation, refrigeration | 25 | 29 | 25 |
| 43. | Engines, repair and maintenance | 100 | 84 | 80 |
| 44. | Machinist | 49 | 100 | 66 |
| 45. | Welding | 58 | 83 | 100 |
| 46. | Drafting (design, building, elevations) | 29 | 37 | 30 |
| 47. | Hydraulics and pneumatics | 39 | 52 | 46 |
| 48. | Industrial chemistry | 22 | 30 | 26 |
| 49. | Quality control | 37 | 41 | 37 |
| 50. | Electrical wiring | 39 | 44 | 44 |
| 51. | Electrical power and distribution | 29 | 38 | 36 |
| 52. | Electronics | 17 | 25 | 20 |
| 53. | Appliance repair | 25 | 32 | 26 |
| 54. | Blueprint reading | 34 | 44 | 37 |
| 55. | Technical and ser. manuals, handbooks | 59 | 62 | 60 |

TABLE A-9--Continued

| | Identification number of Competency: | 46 | 47 | 48 | 49 |
|---|---|---|---|---|---|
| Ident. No. | Competencies | | | | |
| 1. | Plant propagation, seed production | 42 | 31 | 54 | 32 |
| 2. | Plant growth, fertilization | 39 | 27 | 52 | 33 |
| 3. | Control of insects, diseases, weeds | 39 | 29 | 54 | 38 |
| 4. | Soil and water management | 47 | 35 | 52 | 33 |
| 5. | Performing production practices | 43 | 31 | 55 | 34 |
| 6. | Animal breeding, selection | 25 | 16 | 29 | 19 |
| 7. | Animal growth, feeding | 27 | 18 | 29 | 23 |
| 8. | Health and sanitation | 28 | 20 | 31 | 26 |
| 9. | Housing and equipment | 30 | 21 | 30 | 21 |
| 10. | Performing production practices | 26 | 20 | 30 | 23 |
| 11. | Budgeting, records and analysis | 40 | 31 | 44 | 45 |
| 12. | Farm financing (credit, taxes, etc.) | 36 | 28 | 33 | 35 |
| 13. | Labor management | 41 | 35 | 45 | 42 |
| 14. | Marketing practices | 37 | 31 | 47 | 41 |
| 15. | Agricultural policy | 42 | 33 | 48 | 40 |
| 16. | Farm power and machinery | 57 | 60 | 50 | 45 |
| 17. | Farm buildings and conveniences | 45 | 39 | 42 | 34 |
| 18. | Rural electrification and processing | 37 | 34 | 37 | 28 |
| 19. | Soil structures (ditches, ponds, etc.) | 48 | 37 | 48 | 33 |
| 20. | Farm construction and maintenance | 37 | 36 | 39 | 29 |
| 21. | Communications | 45 | 44 | 53 | 58 |
| 22. | Receiving, marking, shipping | 33 | 36 | 41 | 43 |
| 23. | Window and store display | 30 | 27 | 30 | 27 |
| 24. | Salesmanship and customer | 44 | 46 | 44 | 53 |
| 25. | Business mathematics | 48 | 44 | 48 | 48 |
| 26. | Bookkeeping, office machines | 45 | 35 | 45 | 39 |
| 27. | Employee relations with supervisor | 48 | 54 | 52 | 66 |
| 28. | Employee relations with fellow workers | 50 | 52 | 54 | 65 |
| 29. | Buying and merchandising | 46 | 40 | 45 | 44 |
| 30. | Inventory, stock control, warehousing | 45 | 38 | 49 | 57 |
| 31. | Internal business organizations | 49 | 37 | 51 | 53 |
| 32. | Capital management, financing | 35 | 30 | 40 | 35 |
| 33. | Accounting, taxes | 36 | 32 | 36 | 31 |
| 34. | Trade relationships, promotion | 43 | 39 | 51 | 40 |
| 35. | Government regulations | 45 | 36 | 46 | 47 |
| 36. | Building maintenance | 49 | 33 | 46 | 42 |
| 37. | Masonry | 33 | 24 | 34 | 20 |
| 38. | Carpentry and cabinetmaking | 37 | 26 | 36 | 21 |
| 39. | Sheet metal, tinsmith, coppersmith | 42 | 40 | 42 | 25 |
| 40. | Painting and finishing | 47 | 44 | 48 | 29 |
| 41. | Plumbing | 46 | 37 | 46 | 28 |
| 42. | Heating, ventilation, refrigeration | 33 | 27 | 38 | 33 |
| 43. | Engines, repair and maintenance | 63 | 71 | 58 | 49 |
| 44. | Machinist | 47 | 55 | 47 | 31 |
| 45. | Welding | 47 | 61 | 51 | 36 |
| 46. | Drafting (design, building, elevations) | 100 | 51 | 57 | 33 |
| 47. | Hydraulics and pneumatics | 62 | 100 | 57 | 35 |
| 48. | Industrial chemistry | 46 | 38 | 100 | 33 |
| 49. | Quality control | 55 | 48 | 68 | 100 |
| 50. | Electrical wiring | 46 | 48 | 48 | 31 |
| 51. | Electrical power and distribution | 42 | 44 | 47 | 28 |
| 52. | Electronics | 33 | 32 | 34 | 16 |
| 53. | Appliance repair | 35 | 29 | 39 | 23 |
| 54. | Bluepring reading | 72 | 50 | 52 | 37 |
| 55. | Technical and ser. manuals, handbooks | 64 | 65 | 64 | 65 |

TABLE A-9--Continued

| Ident. No. | Competencies<br>Identification number of Competency: | 50 | 51 | 52 | 53 | 54 | 55 |
|---|---|---|---|---|---|---|---|
| 1. | Plant propagation, seed production | 31 | 37 | 41 | 41 | 35 | 27 |
| 2. | Plant growth, fertilization | 29 | 35 | 39 | 40 | 37 | 29 |
| 3. | Control of insects, diseases, weeds | 30 | 39 | 40 | 42 | 37 | 31 |
| 4. | Soil and water management | 32 | 40 | 41 | 45 | 41 | 30 |
| 5. | Performing production practices | 32 | 42 | 43 | 45 | 38 | 30 |
| 6. | Animal breeding, selection | 19 | 21 | 27 | 23 | 20 | 15 |
| 7. | Animal growth, feeding | 22 | 24 | 27 | 26 | 21 | 18 |
| 8. | Health and sanitation | 23 | 27 | 29 | 29 | 21 | 19 |
| 9. | Housing and equipment | 23 | 26 | 26 | 27 | 22 | 18 |
| 10. | Performing production practices | 19 | 24 | 26 | 24 | 21 | 16 |
| 11. | Budgeting, records and analysis | 34 | 37 | 35 | 33 | 39 | 37 |
| 12. | Farm financing (credit, taxes, etc.) | 29 | 31 | 32 | 30 | 35 | 28 |
| 13. | Labor management | 37 | 42 | 40 | 39 | 41 | 33 |
| 14. | Marketing practices | 35 | 35 | 33 | 38 | 34 | 33 |
| 15. | Agricultural policy | 30 | 35 | 35 | 34 | 37 | 31 |
| 16. | Farm power and machinery | 55 | 57 | 55 | 55 | 59 | 51 |
| 17. | Farm buildings and conveniences | 46 | 48 | 47 | 43 | 38 | 29 |
| 18. | Rural electrification and processing | 39 | 45 | 50 | 38 | 35 | 22 |
| 19. | Soil structures (ditches, ponds, etc.) | 39 | 44 | 48 | 47 | 43 | 31 |
| 20. | Farm construction and maintenance | 40 | 45 | 46 | 43 | 37 | 28 |
| 21. | Communications | 46 | 44 | 48 | 41 | 46 | 54 |
| 22. | Receiving, marking, shipping | 40 | 43 | 42 | 42 | 37 | 37 |
| 23. | Window and store display | 26 | 27 | 35 | 29 | 26 | 22 |
| 24. | Salesmanship and customer relations | 44 | 45 | 43 | 36 | 47 | 54 |
| 25. | Business mathematics | 43 | 44 | 47 | 41 | 47 | 43 |
| 26. | Bookkeeping, office machines | 34 | 37 | 40 | 40 | 41 | 32 |
| 27. | Employee relations with supervisor | 47 | 47 | 48 | 41 | 54 | 64 |
| 28. | Employee relations with fellow workers | 45 | 45 | 47 | 42 | 54 | 64 |
| 29. | Buying and merchandising | 39 | 40 | 43 | 36 | 42 | 41 |
| 30. | Inventory, stock control, warehousing | 44 | 47 | 38 | 41 | 42 | 46 |
| 31. | Internal business organizations | 42 | 45 | 40 | 38 | 44 | 41 |
| 32. | Capital management, financing | 34 | 34 | 45 | 38 | 35 | 31 |
| 33. | Accounting, taxes | 31 | 34 | 46 | 41 | 36 | 26 |
| 34. | Trade relationships, promotion | 38 | 42 | 43 | 45 | 39 | 38 |
| 35. | Government regulations | 35 | 40 | 45 | 45 | 42 | 37 |
| 36. | Building maintenance | 58 | 53 | 60 | 61 | 42 | 35 |
| 37. | Masonry | 43 | 39 | 48 | 4[illegible] | 30 | 19 |
| 38. | Carpentry and cabinetmaking | 51 | 48 | 53 | 55 | 33 | 21 |
| 39. | Sheet metal, tinsmith, coppersmith | 51 | 51 | 57 | 49 | 36 | 22 |
| 40. | Painting and finishing | 64 | 60 | 59 | 63 | 40 | 29 |
| 41. | Plumbing | 59 | 55 | 58 | 60 | 42 | 28 |
| 42. | Heating, ventilation, refrigeration | 43 | 46 | 55 | 50 | 28 | 22 |
| 43. | Engines, repair and maintenance | 73 | 73 | 72 | 68 | 55 | 48 |
| 44. | Machinist | 48 | 57 | 60 | 50 | 41 | 30 |
| 45. | Welding | 61 | 66 | 63 | 51 | 44 | 36 |
| 46. | Drafting, (design, building, elevation ) | 40 | 48 | 64 | 43 | 53 | 24 |
| 47. | Hydraulics and pneumatics | 50 | 62 | 74 | 43 | 44 | 29 |
| 48. | Industrial chemistry | 34 | 44 | 54 | 39 | 31 | 19 |
| 49. | Quality control | 46 | 53 | 52 | 47 | 46 | 41 |
| 50. | Electrical wiring | 100 | 85 | 76 | 68 | 39 | 28 |
| 51. | Electrical power and distribution | 64 | 100 | 81 | 59 | 35 | 22 |
| 52. | Electronics | 34 | 48 | 100 | 42 | 24 | 13 |
| 53. | Appliance repair | 48 | 56 | 67 | 100 | 29 | 19 |
| 54. | Blueprint reading | 46 | 55 | 63 | 49 | 100 | 39 |
| 55. | Technical and ser. manuals, handbooks | 65 | 68 | 66 | 64 | 76 | 100 |

# APPENDIX-B

## Instruments

| | |
|---|---|
| Form 1 | General Information |
| Form 2 | Specific Job Title Information |

Date of Interview ____________ Interviewer ____________

## EMPLOYMENT OPPORTUNITIES AND NEEDED COMPETENCIES IN AGRICULTURAL OCCUPATIONS OTHER THAN FARMING

### FORM 1

I. Business or Service -- Standard Industrial Code ____________

A. Name of business or service ____________

Address ____________ County ____________

B. Person interviewed ____________

Position ____________ Telephone No. ____________

C. Year this business or service was established in this locality ____________

D. Estimated per cent gross income that is agriculturally oriented ____________

E. Major agricultural products and/or functions of this business or service

____________

____________

II. Employees in this business or service -- Total number ____________

For employees needing competencies in agriculture, complete the following:

| A. Existing Job Titles* | Number of Employees | |
|---|---|---|
| | Full-time | Part-time |
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |
| 6. | | |
| B. Anticipated Job Titles* | | |
| 1. | | |
| 2. | | |

*Fill out a separate form 2 for each job title listed above including anticipated job titles.

Interviewer____________________

Date of Interview______________

## EMPLOYMENT OPPORTUNITIES AND NEEDED COMPETENCIES IN AGRICULTURAL OCCUPATIONS OTHER THAN FARMING

### FORM 2

I. Identification of Business or Service and Job Title

A. Name of business or service______________________________

Address______________________County______________________

B. Job title from Form 1______________________________

II. Information about Employees in this Job Title

A. Number of employees and years of tenure

| Employment Status | No. of Employees |  | Employees to be * hired during next 5 years |  | Average years an employee stays in this job title |
|---|---|---|---|---|---|
|  | Actual this year | Expected 5 years from now | Number | Age |  |
| Full-time |  |  |  |  |  |
| Part-time |  |  |  |  |  |

B. Wage or salary information for this job title

| Employment status | Average hours paid per week | Average weeks paid per week | Wages or Salary by Pay Periods (hour, week, month or year) |  |  |  |
|---|---|---|---|---|---|---|
|  |  |  | Beginning |  | Highest |  |
|  |  |  | Pay period | Amount | Pay period | Amount |
| Full-time |  |  |  |  |  |  |
| Part-time |  |  |  |  |  |  |

C. Activities and duties of persons with this job title

______________________________________________________

______________________________________________________

______________________________________________________

______________________________________________________

______________________________________________________

*To replace present employee or employees in this job title and for anticipated increase.

III. Characteristics desired in those who enter this Job Title

A. Educational level (check one only)

_____1. Less than high school graduation

_____2. High school graduation

_____3. Post high school technical education

_____4. Some college education (not a degree)

_____5. Associated or junior college degree

_____6. Baccalaureat degree

_____7. Master's degree

_____8. Doctor's degree

B. Residential and experience background (check one only)

_____1. Farm _____2. Rural, non-farm _____3. Urban

_____4. No preference

C. Experience desired to enter this Job Title_____________________________

IV. Limitations on entering this Job Title

A. Licensing or certification (professional, industrial, Civil Service, etc.)

B. Labor law restrictions

C. Labor union restrictions

D. Physical - age, strength, etc.

E. Other (specify)

V. Education desired to advance in this Job Title or to a related position

A. Technical short course or other training provided by:

_____1. A short course by your business or the industry as a whole

_____2. On-the-job training in your business

_____3. A public school (adult educ.)

_____4. An agricultural college or technical institute

B. Other types of education desired_____________________________

VI. Competencies Associated with this Job Title

A. Agricultural Competencies

| | Check degree of competency needed | | | | | |
|---|---|---|---|---|---|---|
| | To enter this job as a beginning employee | | | To advance in this job title or to a related position | | |
| | Unnecessary | Desirable | Essential | Unnecessary | Desirable | Essential |
| 1. Plant Science | | | | | | |
| Plant propagation, seed production. | | | | | | |
| Plant growth, fertilization | | | | | | |
| Control of insects, diseases, weeds | | | | | | |
| Soil and Water Management | | | | | | |
| Performing production practices | | | | | | |
| 2. Animal Science | | | | | | |
| Animal breeding, selection. | | | | | | |
| Animal growth, feeding. | | | | | | |
| Health and sanitation | | | | | | |
| Housing and equipment | | | | | | |
| Performing production practices | | | | | | |
| 3. Agricultural Business Management & Marketing (farming and agri-business) | | | | | | |
| Budgeting, records and analysis | | | | | | |
| Farm financing (credit, taxes, etc) | | | | | | |
| Labor management. | | | | | | |
| Marketing practices | | | | | | |
| Agricultural Policy | | | | | | |
| 4. Agricultural Mechanics and Automation | | | | | | |
| Farm power and machinery | | | | | | |
| Farm buildings and conveniences | | | | | | |
| Rural electrification and process. | | | | | | |
| Soil structures (ditches, ponds,) | | | | | | |
| Farm construction and maintenance | | | | | | |

List other agricultural competencies that are needed for this job title.

________________________________________

________________________________________

B. Business and distributive competencies

| | Check degree of competency needed | | | | | |
|---|---|---|---|---|---|---|
| | To *enter* this job as a beginning employee | | | To *advance* in this job title or to a related position | | |
| | Unnecessary | Desirable | Essential | Unnecessary | Desirable | Essential |
| 1. Duties of employees | | | | | | |
| Communications | | | | | | |
| Receiving, marking, shipping | | | | | | |
| Window and store display | | | | | | |
| Salesmanship and customer relat. | | | | | | |
| Business mathematics | | | | | | |
| Bookkeeping, office machines | | | | | | |
| 2. Business Organization and Supervision | | | | | | |
| Employee relations with supervisor | | | | | | |
| Employee relations with fellow workers | | | | | | |
| Buying and merchandising | | | | | | |
| Inventory, stock control, warehousing | | | | | | |
| Internal business organizations | | | | | | |
| 3. Management and Economics of Business | | | | | | |
| Capital management, financing | | | | | | |
| Accounting, taxes | | | | | | |
| Trade relationships, promotion advertising | | | | | | |
| Government regulations (ICC, PUC, FICA) | | | | | | |

List other business and distributive competencies needed for this job title.

C. Trade and Industrial competencies

| | Check degree of competency needed | | | | | |
|---|---|---|---|---|---|---|
| | To enter this job as a beginning employee | | | To advance in this job title or to a related position | | |
| | Unnecessary | Desirable | Essential | Unnecessary | Desirable | Essential |
| 1. Construction Trades | | | | | | |
| Building maintenance | | | | | | |
| Masonry | | | | | | |
| Carpentry and cabinetmaking | | | | | | |
| Sheet metal, tinsmith, coppersmith | | | | | | |
| Painting and finishing | | | | | | |
| Plumbing | | | | | | |
| Heating, ventilation, refri. and air condition | | | | | | |
| 2. Metal Trades | | | | | | |
| Engines, repair and maintenance | | | | | | |
| Machinist | | | | | | |
| Welding | | | | | | |
| 3. Technicians | | | | | | |
| Drafting (design, building, elevations) | | | | | | |
| Hydraulics and pneumatics | | | | | | |
| Industrial chemistry | | | | | | |
| Quality control | | | | | | |
| 4. Electrical Trades | | | | | | |
| Electrical wiring | | | | | | |
| Electrical power and distribution | | | | | | |
| Electronics | | | | | | |
| Appliance repair | | | | | | |
| 5. Related Subjects | | | | | | |
| Blueprint reading | | | | | | |
| Technical and service manuals and handbooks, etc. | | | | | | |

List other trade and industrial competencies that are needed for this job title.

____________________________________________